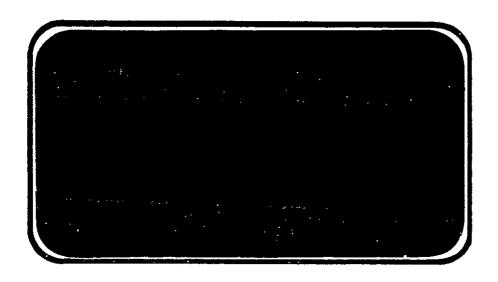


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA CR-

141825



(NASA-CR-141825) RESULTS OF AN INVESTIGATION OF THE 0.003-SCALE SPACE SHUTTLE EXTERNAL TANK MSFC MODEL 460 IN THE .NASA/MSFC 14 X 14 INCH TRISONIC WIND TUNNEL TO DETERMINE STATIC PRESSURE DISTRIBUTIONS

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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER HOUSTON, TEXAS

DATA MANagement services SPACE DIVISION

DMS-DR-2165 NASA CR-141,825 VOLUME 3 OF 5

RESULTS OF AN INVESTIGATION OF THE 0.003-SCALE

SPACE SHUTTLE EXTERNAL TANK MSFC MODEL 460

IN THE NASA/MSFC 14 X 14-INCH TRISONIC WIND TUNNEL
TO DETERMINE STATIC PRESSURE DISTRIBUTIONS DURING

REENTRY (TA2F)

by

P. E. Ramsey, MSFC G. W. Winkler, NSI

Prepared under NASA Contract Number NAS9-13247

by

uata Management Services . Chrysler Corporation Space Division New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center National Aeronautics and Space Administration Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number: MSFC TWT 596

NASA Series Number: TA2F - 460 Model Number:

July 20-23, 1974 Test Dates:

Occupancy Hours: ·104

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Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

RESULTS OF AN INVESTIGATION OF AN 0.003-SCALE

SPACE SHUTTLE EXTERNAL TANK MSFC MODEL 460 IN THE

NASA/MSFC 14 x 14-INCH TRISONIC WIND TUNNEL TO

DETERMINE STATIC PRESSURE DISTRIBUTIONS DURING REENTRY

(TA2F)

by

P. E. Ramsey, MSFC, and G. W. Winkler, NSI

ABSTRACT

Objective of the test was to obtain static pressure distributions for the ET at reentry conditions. Basic configuration of the model was the MCR 0200 ET modified to include a rectangular crossbar at the aft ET/orbiter attach point. Mach numbers were 1.96, 3.48, and 4.96. Reynolds number per foot at these Mach numbers were 6.95 million, 6.42 million, and 4.95 million, respectively. Angle of attack range was -8 to 100 degrees and roll angle was 0 to 315 degrees. Occupancy hours were 104.

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VOLUMES 1				
4	PRESSURE DISTRIBUTION OVER ET T1 MODEL WITH PROTUBERANCES	PHI, ALPHA, THETA, MACH	A	1-1200
VOLUME 3	•			
5	CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES	PHI, ALPHA, X/LB, MACH	В	1201-2000
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6	LOCAL NORMAL FORCE DISTRIBUTION - TI WITH PROTUBERANCES	PHI, ALPHA, MACH	c ·	2001-2040
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SCHEDULE OF COEFFICIENTS PLOTTED:

- A) CP vs. X/LB
- B) CP vs. THETA
- C) DCNM/D(X/LB) vs. X/LB
- D) DCYM/D(X/LB) vs. X/LB
- E) CNM vs. ALPHA CLMM CYM CYNM

NOMENCLATURE

	Plot		
Symbol	Symbol	<u>Definition</u>	<u>Units</u>
a		speed of sound	m/sec, ft/sec
A _b		base area; cross-sectional area of the cylindrical ET	in. ²
^b ref	BREF	reference span; diameter of the cylindrical section of the model	in.
ET		external tank	
FA		axial force (AF), positive in the negative direction of $x_{\mbox{\scriptsize m}}$	1b '
F _N		normal force (NF), positive in the negative direction of $z_{\mbox{\scriptsize m}}$	1b
Fγ		side force (SF), positive in the positive direction of \mathbf{y}_{m}	1b
٤B	LBODY	length of the ET	in.
^l ref	LREF	reference length; diameter of the cylindrical section of the model	in.
M	МАСН	Mach number; V/a	
MRP	MRP	moment reference point located in the x_m , y_m , z_m axes by XMRP, YMRP, and ZMRP (See Data Reduction section)	
M _x		rolling moment (RM); a moment about the x_m axis (a positive rolling moment tends to rotate the positive y_m axis toward the positive z_m axis)	inlb
My		pitching moment (PM); a moment about the y_m axis (a positive pitching moment tends to rotate the positive z_m axis toward the positive x_m axis)	in1b
ċ 'g		center of gravity	

NOMENCLATURE (Continued).

Symbol	Plot Symbol	Definition	Units
M _Z .		yawing moment (YM); a moment about the z_m axis (a positive yawing moment tends to rotate the positive x_m axis toward the positive y_m axis)	inlb
p_{∞}	P	pressure, freestream	psi
Po q∞	PO Q(PSI)	stagnation pressure free stream dynamic pressure	psi psi
S _{ref} .	SREF	reference area; cross-sectional area of the cylindrical section of the model	in.2
RN/L	RN/L	unit Reynolds number	per m, per ft
SRB		solid rocket booster	
V		velocity	m/sec, ft/sec
x _m ,y _m ,z _m		missile axis system (see Data Reduction section)	
X		distance from nose of ET model in the negative \mathbf{x}_{m} direction	in.
X_{T}, Y_{T}, Z_{T}		model stations; (see figure 2a)	in.
XCb/rB	XCP/L	longitudinal position of the center of pressure, expressed as a fraction of the ET length, measured from the ET nose	
		$\frac{X_{CP}}{\ell_B} = \frac{X_{MRP}}{\ell_B} - \frac{C_{m_m}}{C_{N_m}} \frac{\ell_{ref}}{\ell_B}$	
ō		aerodynamic chord	m,ft
COEFFICIEN	TS		
c_{A_m}	CA	axial force coefficient; FA/q S _{ref}	

NOMENCLATURE (Continued)

Symbol	Plot Symbol	<u>Definition</u>	Units
$c_{A_{b_m}}$	CAB	base axial force coefficient; $(p_{\infty} - p_b) A_B/q S_{ref}$	
c _{Af}	CAF	forebody axial force coefficient; $^{C_{A_m}}$ - $^{C_{A_{b_m}}}$	
c_{ℓ_m}	CBL	rolling moment coefficient; M _X /q S _{ref} b _{ref}	
c_{m_m}	CLMM	pitching moment coefficient; My/q S _{ref lref}	
c _{Nm}	CNM	normal force coefficient; F _N /q S _{ref}	
c_{n_m}	CYNM	yawing moment coefficient; M _Z /q S _{ref} b _{ref}	
c_p	СР	pressure coefficient; $(p-p_{\infty})/q$	
c _{Ym} .	CYM	side force coefficient; $F_y/q S_{ref}$	
C _{Nm}	DCN/DX	local normal force coefficient; aC _N /a(X/D)	
c_{Y_m} .	DCY/DX	local side force coefficient; $\partial C_{\gamma}/\partial (X/D)$	
SYMBOLS			
a ·	ALPHA	angle of attack	deg.
β	BETA	angle of sideslip	deg.
ф	PHI	angle of roll	deg.
ψ	PSI	angle of yaw	deg.

NOMENCLATURE (Concluded)

Symbol	Plot Symbol	<u>Definition</u>	Units
θ	THETA	circumferential location	deg.
ρ		mass density	kg/m³, slugs/ft³
ref		reference conditions	
ထ		free stream conditions	
b		base	
С		cavity	
t		total conditions	
В		model body	
T		external tank	
m .		missile axis system	
1		local	
s		static conditions	
	MOUNT	1.0 indicates tail mounted (T_1) 2.0 indicates side mounted (T_2)	

INTRODUCTION

After the solid rocket boosters and the external tank separate from the orbiter, the ET will reenter the earth's atmosphere at high supersonic or even hypersonic Mach numbers. This test is the second of two tests conducted in the NASA-MSFC 14-inch Trisonic Wind Tunnel to obtain force and pressure data on the 324-inch diameter ET at typical reentry angles of attack.

Model (MSFC No. 460) configuration is a 0.003-scale representation of the ET with fuel lines and forward and aft SRB and orbiter attach hardware. Also included is the ET/orbiter rectangular crossbar attach structure.

Pressure taps (192 total) were used to obtain data for evaluating the load distribution on the ET. Further evaluation of the ET aerodynamic characteristics can be made by comparing data from this test with data from TWT 583 (reference 4).

Pressure data were taken at three Mach numbers: 1.96, 3.48, and 4.96. Angle of attack range was -8 to 100 degrees, which was obtained by using two ET model mountings. Range -8 to 30 degrees used a tail-mounted model (T_1) for each of eight roll positions, 0 to 315 degrees. This model had attach structure and protuberances. For the range of 51 to 100 degrees, a side-mounted model (T_2) at 0° roll position was used.

MODEL DESCRIPTION

The model is a 0.003-scale of the MCR 0200 space shuttle ET configuration modified to include a crossbar at the aft orbiter/ET attach points. General arrangement of the model is shown in figure 2a. The model is designated MSFC #460, and it consists of two ET models (one tail-mounted and one side-mounted); protuberances simulating fuel lines, attachment hardware, etc.; and model adapters which allowed the tanks to be supported in the tunnel on RI stings #1 and #3. The models were built by NASA to conform to the configuration specified by Rockwell International drawing VL78-000041B (Reference Drawing 6) and Martin-Marietta memo SA-A-74-9 (Reference Report 2).

Both ET models were made of stainless steel and contained 192 pressure orifices each. From these orifices, stainless steel and annealed 0.032-inch OD tubing was routed out the base (or the side) of the model. Four feet of 0.050-inch OD tubing was brazed onto each of the 0.032-inch tubes as close to the exit cavity as possible.

When placed in the tunnel test section, the tubing bundle from the model was secured along the sting and routed down the sector through the tunnel floor. At this point, Tygon tubing was used to connect the steel tubing to quick disconnects, which were connected to the scanivalves. Installation photographs for the tail mounted (T_1) and side mounted (T_2) models are in figures 3a and 3b, respectively.

Model stations are sometimes used to describe locations of various components of the model. When used, these stations will be given in

MODEL DESCRIPTION (Concluded)

inches model scale and the zero reference points will be same as in Rock-well International drawing VL72-000088"D" (Reference Drawing 2). Zero reference points are shown in figure 2a.

CONFIGURATIONS INVESTIGATED

Two ET configurations investigated are defined as follows:

 T_1 --MCR 0200 tail-mounted, modified to include crossbar configuration with protuberances.

T2--MCR 0200 side-mounted, "clean" configuration (without protuberances).

Each of the configurations consists of the following model components:

$$\mathsf{T}_1\mathsf{--}\mathsf{T}_{12}\ \mathsf{A}\mathsf{T}_5\ \mathsf{A}\mathsf{T}_6\ \mathsf{A}\mathsf{T}_7\ \mathsf{A}\mathsf{T}_8\ \mathsf{A}\mathsf{T}_9\ \mathsf{P}\mathsf{T}_1\ \mathsf{P}\mathsf{T}_2\ \mathsf{P}\mathsf{T}_3\ \mathsf{FL}_1\ \mathsf{FL}_2\ \mathsf{FR}_6$$

$$T_2 - T_{12}$$

Brief descriptions of each component are below. Refer to table III for dimensional data.

T₁₂ Baseline 324-inch diameter external oxygen-hydrogen tank

· AT₅ Forward orbiter/ET attach structure

AT₆ Left rear orbiter/ET attach structure

AT₇ Right rear orbiter/ET attach structure

AT₈ Forward SRB/ET attach structure

ATg Aft SRB/ET attach structure

PT₁ LOX vent line fairing

PT₂ LOX feed line

PT₃ LH₂ feed line

FL₁ LOX feed line

FL₂ LH₂ feed line

FR₆ Aft ET/orbiter crossbar

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks is tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F. The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 95°.

TEST FACILITY DESCRIPTION (Concluded)

The diffuser section has movable floor and ceiling panels which are the primary means of controlling the subsonic Mach numbers and permit more efficient running supersonically. The sector assembly and supersonic diffuser telescope into the subsonic diffuser to allow easy access to the model and test section.

Tunnel flow is exhausted through an acoustically damped tower to atmosphere or into the vacuum field of 42,000 cubic feet. The vacuum tanks are evacuated by vacuum pumps driven by a motor of 500 hp.

Data are recorded by a solid-state digital data acquisition system.

The digital data are transferred to punched cards during the run to be reduced later by a computer to proper coefficient form.

TEST PROCEDURE

First part of the test was conducted using a side-mounted, "clean" configuration (T₂ without protuberances). Since it was a "clean" configuration, the roll angle was considered to always be 0 degrees. Angle of attack range was from 51 to 100 degrees in increments of 3 degrees. Data were obtained at Mach numbers of 1.96, 3.48, and 4.96.

Second part of the test consisted of using a tail-mounted model with attach hardware, fuel lines, and electrical tunnel. Angle of attack range was from -8 to 30 degrees in increments of 4 degrees. Data were obtained at eight roll positions, 0 to 315 degrees in 45-degree increments. All orifices and tubing were checked for leakage at the beginning of the test and after each roll position change. A leak check after rolling the model insured that correct measurements were being received from the orifices. Response time for the scanivalve function was within the one-second intervals allowed each scanivalve.

List of average test conditions is in table I. Dataset run number collation summary is in table II.

DATA REDUCTION

Location of each pressure orifice and the numbering system are presented in tables IV and V. Also special identification of blocked or inoperative pressure orifices is made for both tail-mounted and side-mounted
models in these tables. Locations of these orifices are shown in figure
2b.

Sting deflections were measured outside the tunnel by using check weights. Sting deflections versus load curve for the pressure test (TWT 596) was found to be the same, within allowable accuracy, as that of the force test (TWT 583). The same ET configuration and only slightly different support hardware were used in both force and pressure tests. Increments of α due to sting bending in the force test were added to the nominal α 's for the pressure test. This gave reasonably accurate values of angle of attack, accuracy comparable to force test, when the pressure model was tested at the same Mach number and tunnel total pressure as the force model.

Pressure data were reduced to coefficient form and are tabulated along with wind tunnel parameters, configuration, and run number in the appendix. Plots are presented for both longitudinal and circumferential pressure distributions (C_P vs X/A_B and C_P vs θ). These plots are shown for each Mach number, angle of attack, and roll position at which tests were conducted. In addition, the pressure coefficients were integrated to obtain the following missile axis force and moment coefficients:

DATA REDUCTION (Concluded)

 $C_{N_m} = F_N/q S_{ref}$ normal force coefficient

 $C_{\gamma_m} = F_{\gamma}/q S_{ref}$ side force coefficient

 $C_{m_m} = M\gamma/q S_{ref} \ell_{ref}$ pitching moment coefficient

 $C_{n_m} = M_Z/q S_{ref} b_{ref}$ yawing moment coefficient

 $C_{N_m} = \partial C_N / \partial (X/D)$ local normal force coefficient

 $C\gamma_m' = \partial C\gamma/\partial (X/D)$ local side force coefficient

Force and moment coefficients obtained from the integration of pressures are for comparison with the results from the force test.

Model reference dimensions used in the data reduction are presented in table VI. The axis system diagram is presented in figure 1. The missile axis system (x_m, y_m, z_m) is a non-rolling body axis system that is frequently used in wind tunnel tests and studies of missile flight dynamics. It is a system of axes that rotates with a missile or wind tunnel model through angles of sideslip and angles of attack but never through angles of roll; i.e., it never rotates about the missile or model longitudinal axis. The orientation of the missile axis coefficients is defined in figure 1. The missile axis system is identical with the body axis system at zero roll angle.

Moment reference point (MRP) for the 0.003-scale model is taken to be at the dry weight center of gravity of the ET. For the full-scale ET, the center of gravity is located at XT = 1395.4 inches. Thus, the MRP for the 0.003-scale ET model is 3.259 inches from the model nose, on the centerline (figure 2a).

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- NASA TMX-53185, "The George C. Marshall Space Flight Center's 14 x 14 Inch Trisonic Wind Tunnel Technical Handbook," Simon, Erwin; December 1964.
- 2. SA-A-74-9, "Space Shuttle External Tank Entry Force and Moment Wind Tunnel Test Requirements," Michna, D. J., Michoud Operations, Martin Marietta Corporation, February 1974.
- 3. NSI-M-9230-74-270, "A Pre-test Report for MSFC TWT 596, An Investigation to Determine the Static Pressure Distributions During Reentry of a 0.003-scale Modified MCR 200 Space Shuttle External Tank Model in the NASA-MSFC 14 x 14-Inch Trisonic Wind Tunnel," Robertson, M, K. and Winkler, G. W., April 1974.
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- 1. VL72-000106, 8-6-73; <u>SRB to ET Aft Attach</u>, <u>Approved Link Concept</u>, <u>Shuttle Study</u>; Rockwell International.
- 2. VL72-000088 "D", 8-3-73; Shuttle Configuration Control, MCR 0200 Baseline Rev. III, Dated 7-2-73; Rockwell International.
- 3. VL78-000031 "A", 6-29-73; Thermal Protection-External Tank MCR 0200 Baseline Dated 4-11-73; Rockwell International.
- 4. VL77-000051 "A", 9-10-73; <u>SRB Single PT.-Fwd Thrust Fitting (MCR 0190 Rev. 3 Baseline 8-13-73)</u>; Rockwell International.
- 5. SS-A01176 (Wind Tunnel Model Group); Details .015 Scale EOHT Attachments (140 A/B) (67-OTS) 11-20-73; Rockwell International.
- 6. VL78-000041 "B", 5-30-73; External Tank Configuration Control MCR 0200 Revision 1 Dated 5-16-73; Rockwell International.

		I abic 1.		
TEST:	MSFC TWT 596		. [DATE: Aug 1974
•		, TEST CON	DITIONS	
масн	REYNOLDS	DYNAMIC	STAGNATION	STAGNATION
NUMBER	NUMBER	PRESSURE	TEMPERATURE	PRESSURE
	(per foot)	(pounds/sq.inch)	(degrees Fahrenhelt)	(pounds/sq.inch)
1.96	6.95 x 10 ⁶	10.2	104	28.0
3.48	6.42×10^{6}	6.9	143	60.0
4.96	4.95 x 10 ⁶	3.1	143	90.0
				
<u> </u>			<u> </u>	
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BALAI	ICE UTILIZED: None	- Pressure Test	; 50 PSIA Transdu	cers
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TABLE II. (Continued)

DATA		C TWT 596	J Tsc	HO.			T/RU ERS/V		+			N SUMM	 · <u>'</u>		: Ju			- <u>- </u>	
IDENTI	1	CONFIGURATION				- MT		LUES	1 OF			4.96							
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	27		16	Ш	\coprod				2		187	188				<u> </u>			
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c	29		24						2		183	184							
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	031		-8		0		180		3	61	210	209							
	032		-4-						3	62	207	208							\rfloor
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	234		4						3	64		204							╛
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	OR β						C	DEFFI							IDV	AR (1)	IDVA	AR (2)	2

TABLE II. (Continued)

DATA SET			sc	HD.	PAR	AMETE	RS/VA	LUES	NO.	MA	CH NU	BERS	OR AL	TERNA	TE IN	DEPENC	ENT VA	RIABLE	<u> </u>	
DENTIFIER	CONFIG	URATION	Œ			MT			OF	-		4.96								
91A 037	T, CTAIL	- MOUNTED	16	٥	20	TAIL	180		3	67	198	197								
880	E.T.	WITH	20						3	68	195	196							<u> </u>	
039	PROTU	BERANCES	24						3	69	194	193								_
040			28		y		V		3	70	191	192								
041			-8		٥		225		2		255	126								
042			-4						2		254	127		<u> </u>						
043			0						2		253	/28								
044			4						2		252	129								
045			8		V				2		251	130							<u> </u>	
046			12		20				2		260.	121								
047			16						2		259	122								
048			20						2		258	/23								
049			24						2		257	124								
050			28		V		V	1	2		256	125								
0.51		•	-8		O.		270	100	3	96	101	102								
952			-4					T)	3	97	104	163								
V 053			٥						3	98	105	106								
1A 054	V		4			¥	4		3	99	108	107								
7	13	19			25		31		37		43	49		55		61		67		7
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α OR	a						co	EFFIC!	ENT5							IOV	AR (1)	IDVA	R (2)	٨

TABLE II. (Continued)

DATA SET	CONFIGURATION	sc	нo.	PARA	MET	ERS/V	ALUE:	NO. OF	МА	CH NUN	BERS (OR AL	TERNA	TE IND	EPEND	ENT VA	RIABLE	()	
DENTIFIER		α	β	OFF SET	ø	<u> </u>	<u> </u>	RUNS	196	3.48	4.96								
1A 055	T, CTAIL-MOUNTE	8 0	٥	TAIL	270	<u> </u>	<u> </u>	3	100	109	110								
056	ET WITH	12					4	3	95	120	119								
057	PROTUBERANCES	5)16					, kr	3	94	117	118	•].		
058		20	Ш				V.jr	3	93	116	T F								
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TABLE II. (Continued)

	TE	ST: MS	FC	TW	T 596											n suma					-y 197	ı		
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DENTIFIER			α	β	SET	MI	Ø	- FOMB	1		3,48	4.96	ļ	ļ	<u> </u>			-	ļ	
1A079	Tz (SID	E-MOUNTED	98	٥	90	SIDE	0	E	3	42	37	38	<u> </u>		<u> </u>	<u> </u>		ļ	ļ	_
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TABLE II. (Continued)

TEST: MS	FC TWT 596			DAT	A SE			BER	COLL	.A 10	N SUMMAF			E: J				
DATA SET	CONFIGURATION			PAR				NO. OF		يونس سينسك	4.96	ALTER	VATE IN	DEPENE	ENT VA	RIABLE]	7
Control De Control de la Control de Control	T, (TAIL- MOUNTED	7		1	TAIL	1		2	7.76		220					1	1	-
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083	PROTUBERANCES)	0						2		215	216							
084	· ·	4						2		214	213							
085		8		V				2		211	212		_				<u> </u>	_
086		12		20				2		230	229						 	
087		16						2			228					<u> </u>	<u> </u>	A '
088		20						2		226	225		_				<u> </u>	
089		24			<u> </u>			2			224					<u> </u>	ļ	_
090		28	Ц			<u> </u>		2		222	221						 	
091		-8	\perp	0		315		2		250	249		_				 	_
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V 097		16	$\bot \downarrow$					2			237				-	ļ	ļ	-
NA 698	<u> </u>	20	¥		y			2		235	236	<u> </u>			<u> </u>	<u> </u>	<u> </u>	L
P	13 19			25		31 L L L	DEFFICE	37 LL ENTS		1.1.1.	49	55 		61 	/AR (1)	67 IDVA		75 : ND
α OR SCHEDUI																		

DATA SET	CONFIGURATION	sc	HD.	PARA	METE	RS/V	ALUES	4 (36	5				TERNA	TEIND	EPEND	ENT VA	RIABLE	}	1
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Piiii							DEFFI	بيا	111			111			سبا	AR (1)	IDVA	R (2)	7

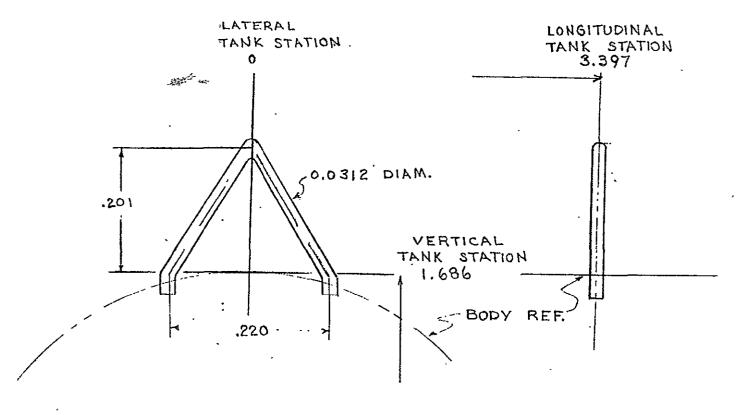
TABLE III. MODEL DIMENSIONAL DATA

MODEL COMPONENT: EXTERNAL TANK - T	12	
GENERAL DESCRIPTION: EXTERNAL OXYG	GEN - HYDROGEN TANK	WITH OGIVE NOSE AND
SEMI-ELIPTICAL TAIL. BEGINNING AT	MODEL TANK STATION	0.927 AND FNDING AT STATION
6.522		
MODEL SCALE: 0.003		,
REFERENCE DRAWING: VL78-000041B		
	THEORE	ETICAL
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length	1865 in.	. 5.595 in.
Max. Width	<u>324 in.</u>	0.972 in.
Fineness'Řatio	5.756 in.	5.756 in.
Max. Cross-Sectional	572.555 ft ²	0.742 in. ²
Base	572.555_ft ²	0.742 in. ²
WL OF TANK CENTERLINE.	400 in.	1.200 in.

TABLE III. (Continued)

MODEL COMPONENT:	ATTACH STRUCTURE - AT ₅	
GENERAL DESCRIPTION:	FORWARD ORBITER/ET ATTACH STRUCTURE	
(2 MEMBERS)	•	· i
,	·	
MODEL SCALE: 0.003	,	,
REFERENCE DRAWING: VL	72-000088D	

ALL DIMENSIONS IN INCHES MODEL SCALE



MODEL COMPONENT:	ATTACH STRUCTURE	- AT ₆
GENERAL DESCRIPTION:	LEFT REAR ORBITE	R/ET ATTACH STRUCTURE (2 MEMBERS)
ODEL SCALE: 0.003		
EFERENCE DRAWING:	VL78-000050	
·		ALL DIMENSIONS IN INCHES MODEL SCALE
<u> </u>		· ·
	٠.	LATERAL TANK STA.
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-		0.288
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2 100/ 2001		
.036 DIAM.		
6.577	9.0	
1 577		
GTIDUNÁL FANK STA.		1.2
-		VERTICAL
		TANK STA.

TABLE III. (Continued)

MODEL COMPONENT:	ATTACH STRUCTURE - AT7
GENERAL DESCRIPTION	RIGHT REAR ORBITER/ET ATTACH STRUCTURE (3 MEMBERS)

MODEL SCALE: 0.	
REFERENCE DRAWING:	VL78-000050
5.577 ONGITUDINAL FANK STATION	DIAMETERS 0.036 LATERAL TANK STATION 1.686 VERTICAL TANK, STATION 1.686 VERTICAL TANK, STATION 32

TABLE III. (Continued)

MODEL COMPONENT: ATTACH STRUCTURE - AT8		
GENERAL DESCRIPTION: FORWARD SRB/ET ATTACH STRUCTURE (ET PO	ORTION TESTED ONLY)
MODEL SCALE: 0.003		
REFERENCE DRAWING: VL77-000051A		

ALL DIMENSIONS IN INCHES MODEL SCALE

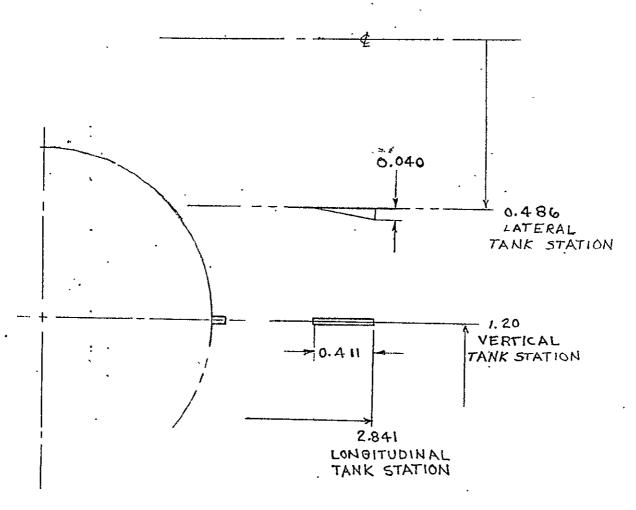


TABLE III. (Continued)

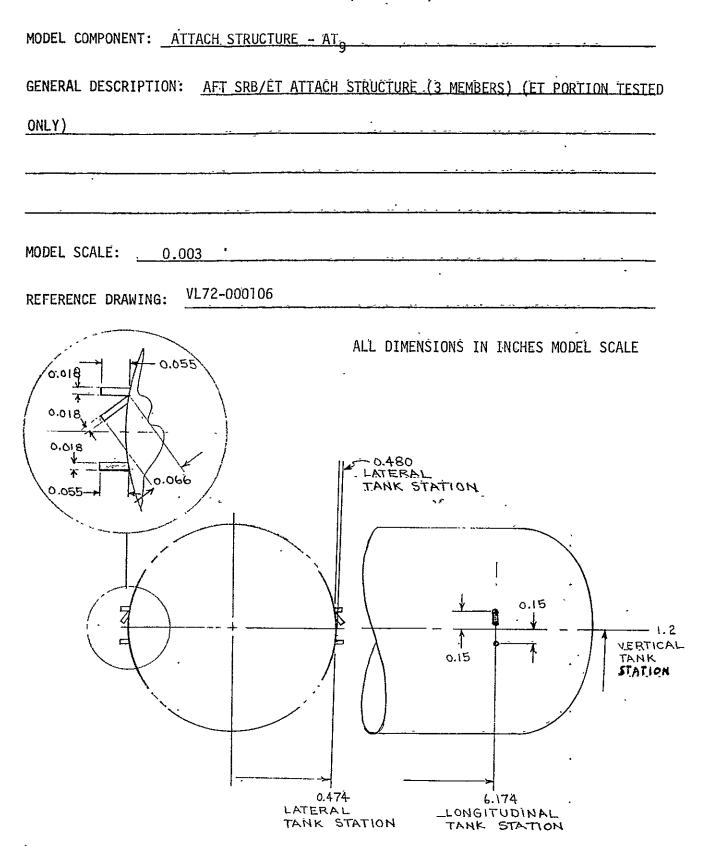


TABLE III. (Continued)

MODEL COMPONENT: LOX VENT LINE FA	IRING - PT											
GENERAL DESCRIPTION: VENT LINE AL	ONG UPPER RIGHT S	IDE OF ET OGIVE NOSE										
BEGINNING AT MODEL STATIONS X _T = 0	.927. Y _T = 0. AND	Z _T = 1.2; TERMINATING AT										
$X_{T} = 2.841, Y_{T} = 0.162, Z_{T} = 1.658$												
MODEL SCALE: 0.003	MODEL SCALE: 0.003											
REFERENCE DRAWING: VL78-000031A	- www											
•	THEO	RETICAL										
DIMENSIONS:	FULL-SCALE	MODEL SCALE										
Length	_638 in.	1.914 in.										
Max. Width	17.7 in.	0.053 in.										
Max. Depth	9.3 in.	0.028 in.										
Radial Position	19 1/2°	19 1/2°										

TABLE III. (Continued)

MODEL COMPONENT: LOX FEED LINE -	PT ₂	
GENERAL DESCRIPTION: LONGITUDINAL F	UEL LINE ALONG UPP	ER RIGHT SIDE OF ET
BEGINNING AT MODEL STATIONS $X_T = 2.8$	41, -Y _T = 0.194, A	ND Z _T = 1.645; TERMINATING
AT $X_T = 6.116$, $-Y_T = 0.194$, AND $Z_T =$	1.645	
MODEL SCALE: 0.003		
REFERENCE DRAWING: VL78-000031A	_	
	THEORET	ICAL
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length	1092 in.	3.275 in.
Max. Width	30.7 in.	0.092 in.
Max. Height	28 in.	0.084 in.
Radial Position	<u>-23 1/2°</u>	23 1/2°

TABLE III. (Continued)

MODEL COMPONENT: LH2 FEED LINE - PT	3	
GENERAL DESCRIPTION: LONGITUDINAL	FUEL LINE ALONG UP	PER LEFT SIDE OF ET
BEGINNING AT MODEL STATIONS $X_T = 2.8$	41, Y _T = 0.275. AN	ID 7 _T = 1.601
TERMINATING AT STATIONS $X_T = 6.116$.	Y _T = 0.275, AND Z	= 1.601
,		
MODEL SCALE: 0.003		
REFERENCE DRAWING: VL78-000031A		•
	THEORE	TICAL
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length	<u>1092 in.</u>	3.275 in.
Max. Width	25.7 in.	0.077 in.
Max. Depth	14.7 in.	0.044 in.
Radial Position	33°	~33°

TABLE III. (Continued)

MODEL COMPONENT:	OX FEED LINE - FL				
GENERAL DESCRIPTION:	18-INCH DIAMETER	VERTICAL	FUEL LINE A	T AFT END	OF ET ON
RIGHT		·			
				•	i
·		•			
MODEL SCALE: 0.003		·			
REFERENCE DRAWING:	VL78-000050	,			-
		ĀĹĽ	DIMENSIONS	IN INCHES	MÖDEL SCALE

LATERAL
TANK STATION

-0.210

CONGITUDINAL
TANK STATION

6.234

VERTICAL
TANK STATION

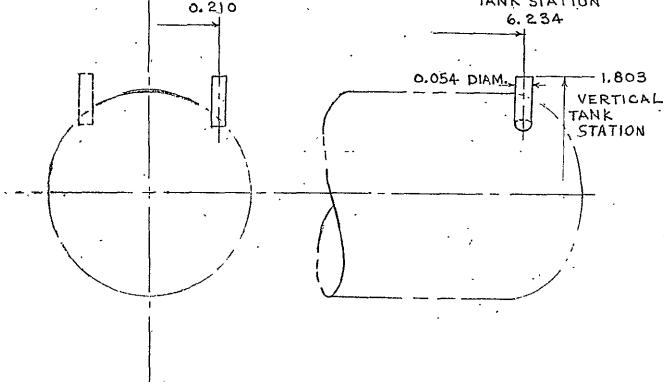
1.803

· TABLE III. (Continued)

GENERAL DESCRIPTION:	18-INCH	DIAMETER	VERTICAL	FUEL LINE	AT AF	END OF ET
N LEFT			•		٠	
٠	•	,	•			
,						3 -
MODEL SCALE: 0.003			,	•		• •

LATERAL LONGITUDINAL TANK STATION TANK STATION 6.234

ALL DIMENSIONS IN INCHES MODEL SCALE



. TABLE III. (Concluded)

GENERAL DESCRIPTION:	ALI	E1/UKBI IEK	CROSS	MEMBER	(-CROSS	SECTION	11 IN.	x 15	IN.
LOCATED AT ET-STATION	205Ò.	5							_
	·				*		•		
		·							
MODEL SCALE: 0.003							•		

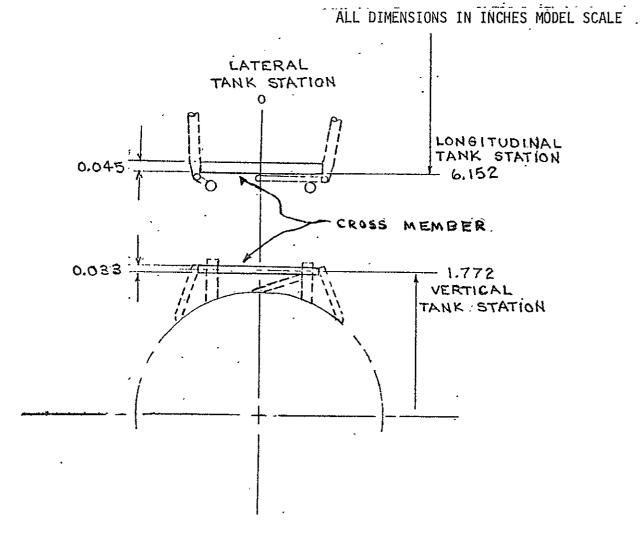


TABLE IV. TABULATED DATA PRINT-OUT FORMAT AND CORRELATION BETWEEN TUBE NUMBER, ORIFICE NUMBER, AND ORIFICE LOCATION ON MODEL

SIDE-MOUNTED ET (T₂ CONFIGURATION)

*inoperable orifice

1 1/2 X	7	i											
40. 40.		0,055	0.108	0.162	0.216	0,322	0.518	0.610	0.735	0.860	0.892	0.923	0.954
	//	0.305	0.605	0.905	1,205	1.800	2.900	3.410	4.110	4.810	4,985	5,160	5.335
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14	B		13	14	15	16	* 17	※ /8	19	20	21	22	23
Z4	1				><	><	><	><	><	24	25	26	27
45	D	28	29	30	31	32	33	34	35	36	37	38	39
67 <u>1</u>	E		40	41	42	43	44	45	46	47	48	49	50
90	F	51	52	53	54	55	5 G	57	58	59	ဖ	61	62
1127	Ģ		63	64	65	66	67	88	69	70	71	72	73
135	H	74	75	76	77	78	79	80	81	82	83	84	85
157	エ		. 86	87	88	89	90	91	92	93	94	95	96
180	J	97	9 B	99	100	101	102	103	104	105	106	107	108
202-	K		109	110	111	112	113	114	115	116	117	118	119
225	L	120	121	122	123	124	125	126	127	128	129	130	131
247	M		132	133	134	135	136	137	138	139	140	141	142
270	2	143	144	145	146	147	148	149	150	151	152	153	154
292	0		155	156	157	158	159	160	161	162	163	164	165
315	P	166	167	168	169	170	171	172	173	174	175	176	177
3 2 6	Q·		$\geq \leq$	><	\searrow	$\geq \leq$	$\geq \leq$	$\geq \leq$	$\geq \leq$	178	179	180	181
346	R		182	183	184	185	*186	*/87	188	189	190	191	192

SIDE-MOUNTED ET (T₂ CONFIGURATION)

*inoperable orifice

1. 14	/ /												_
Por!	(§)	0,055	0.108	0.162	0.216	0,322	0.518	0.610	0.735	0.860	0.892	0.923	0.954
R. Carl	V.	0.305	0.605	0.905	1,205	1.800	2.900	3,410	4.110	4.810	4,985	5,160	5,335
12/			Z	3	4	5	6	7	క	9	10	//	12.
0	А	1	2	3	4	5	* 6	* 7	8	9	10	11	12
14	B		13	14	15	16	* 17	* 18	19	20	21	22	23
Z4	C	$\geq \leq$	$\geq \leq$	$\geq \leq$	$\geq \leq$	$\geq <$	><	><	\searrow	24	25	26	27
45	D	28	29	30	31	32	33	34	35	36	37	38	39
67분	E	$\geq \leq$	40	41	42	43	44	45	46	47	48	4-9	50
90	F	51	52	53	54	<i>5</i> 5	56	57	58.	59	60	61	62
112구	G	$\geq \leq$	63	64	65	66	67	68	69	70	71	172	73
135	H	74	75	76	77	78	79	80	81	82	83	84	85
1572	エ	$\geq \leq$	86	87	පිරි	89	90	91	92	93	94	95	96
180	J	97	98	99	100	101	102	/03	/04	105	/06	107	108
2021	K	$\geq \leq$	109	110	111	112	113	114	115	116	117	118	119
225	L	120	121	122	123	12.4	125	126	127	128	129	130	131
247	Μ	$\geq \leq$	132	/33	134	/35	136	/37	/38	139	140	141	142
270	2	143	144	145	146	147	148	149	150	151	152	153	154
2922	0	$\geq \leq$	155	156	157	<i>15</i> 8	159	160	161	162	163	164	165
315	7	166	167	168	169	170	171	172	173	1.74	175	176	177
326	Q	$\geq \leq$	$\geq \leq$	$\geq \leq$	><	$\geq \leq$	$\geq \leq$			178	179	180 .	181
346	R	$\geq \leq$	182	183	/84	185	*/86	*/87	188	/89	190	191,	192

inoperable orifice:

TAIL-MOUNTED ET (T CONFIGURATION)

0.055 0.108 0.162 0.216 0.322 0.518 0.610 0.735 0.860 0.892 0.923 0.954

	グン													
\dot{s}	6 \ \		0.305	0.605	0.905	1,205	1.800	2.900	3.410	4.110	4,810	4.985	5,160	5.335
Y	v.		1	2	3	4	5	6	7	8	9	10	11	12
	0	Α	1	2	3	4	5	6	7	8	9	/0	1)	12
	14	В		13	14-	15	16	17	18	19	20	21	22	23
	Z4	<u></u>		\searrow	><	><		><	><	$\backslash\!$	24	25	26	27
[45	Þ	28	29	30	31	32	33	34	35 3	[.] 36	37	38	39
	67분	E		40	41	4.2	43	44	4-5	46	47	48	49	50
ĺ	90	F	51	52	53	54	* ₅₅	56	·5 7 ·	<i>5</i> 8.	59	60	61	62
Į	IIZ분	ф		63	64	65	66	67	68	69	70	71	72	73
ĺ	135	H	74	75	76	77	78	79	80	81	* 82	& 3	84	85
	1572	エ		80 9	87	88	89	90	91	92	93	94	95	96
	180	ょ	97	98	99	100	101	102	103	104	105	106	107	108
ĺ	202½	K		109	110	111	112	113	114	115	116	117	118	119
[225	L	120	121	122	123	124	125	126	127	128	129	130	131
	247 2	Μ		/32	/33	/34	135	136	.137	/38	139	140	141	142
[270	N	143	144	145	146	*147	148	149	150	151	152	153	154
	2.92½	0		/55	156	157	158	159	160	161	162	163	764	165
	315	P	166	167	168	169	170	171	172	173	174	175	176	177
	326	Q			><	><	><		><	><	178	179	180	181
1	346	R		182	183	124	185	186	187	148	189	190	191	1.92

TAIL-MOUNTED ET (T1 CONFIGURATION)

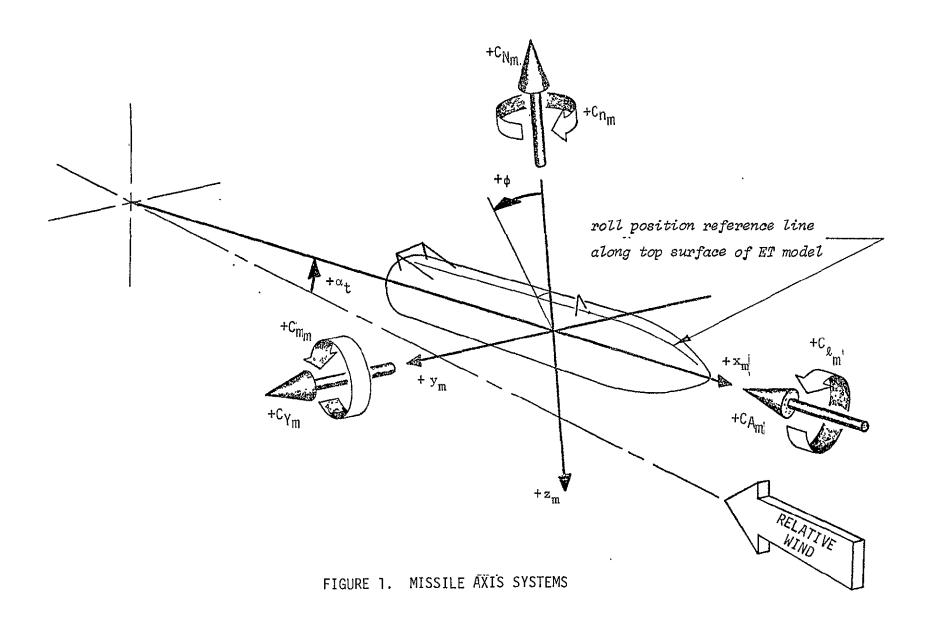
*inoperable orifice.

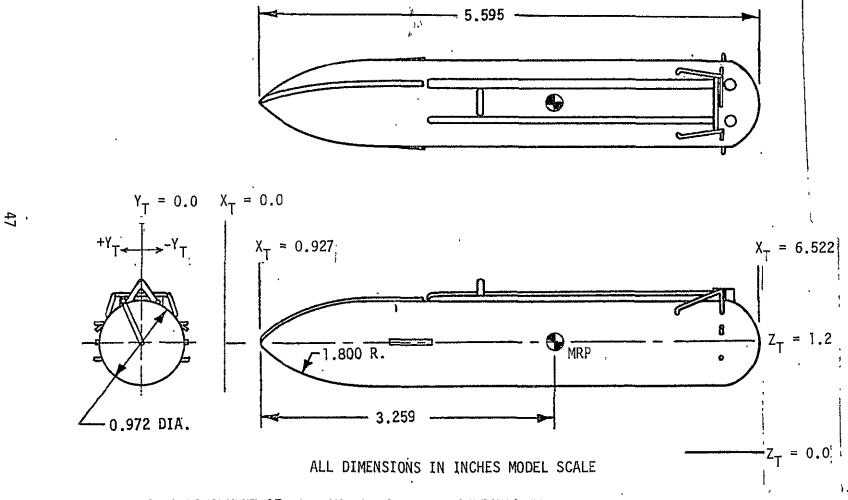
(s. 14.	<i>\ \</i>				,								
187		0.055	0.108	0.162	0.216	0.322	0,518	0.610	0.735	0.860	0.892	0.923	0.954
ROW	V.	0.305	0,605	0.905	1,205	1.800	2.900	3.410	4.110	4.810	4,985	5,160	5.335
'à /		/	2	3	4	5	6	7	8	9	10	11	12.
0	A	1	2.	3	4	5	6	7	8	9	10	11	12
14	B		13	14	15	16	17	78	19	20	21	22	23
Z.4	<u>C</u>		$\geq \leq$		\geq					24	25	26	27
45	D	28	29	30	31	32	33	34	35	36	37	38	39
67분	E	$\geq \leq$	40	41	42_	43	44	4.5	46	47	48	4-9	50
90	F	51	52	53	54	* 55	56	57	58·	59	60	61	62
기고날	G	$\geq \leq$	63	64	65	66	67	68	69	70	.71	72	73
135	H	74	75	76	77	78	79	80	81	*82	83	84	85
157岁	I	$\geq \leq$	86	87	8%	89	90	91	92	93	94	Ŷ5	96
180	J	97	98	99	100	101	102	703	104	105	106	107	108
202-	K		109	110	111	112	113	114	115	116	117	118	119
225	L_	120	121	122	123	124	125	126	127	128	129	130	131
247=	Μ	$\geq \leq$	132	/33	134	/35	136	/37	/38	139	140	141	142
270	2	143	144	145	146	* 147	148	149	150	151	152	153	154
2921	0	$\geq \leq$	155	156	157	158	159	160	161	162	163	164	165
315	P	166	167	168	169	170	171	172	i73	174	175	176	177
326	Q	$\geq \leq$	$\geq \leq$		$\geq \leq$		$\geq \leq$			178	179	180	181
346	R	$\geq \leq$	182	/83	184	785	/86	187	188	189	190	191.	192

Table VI.

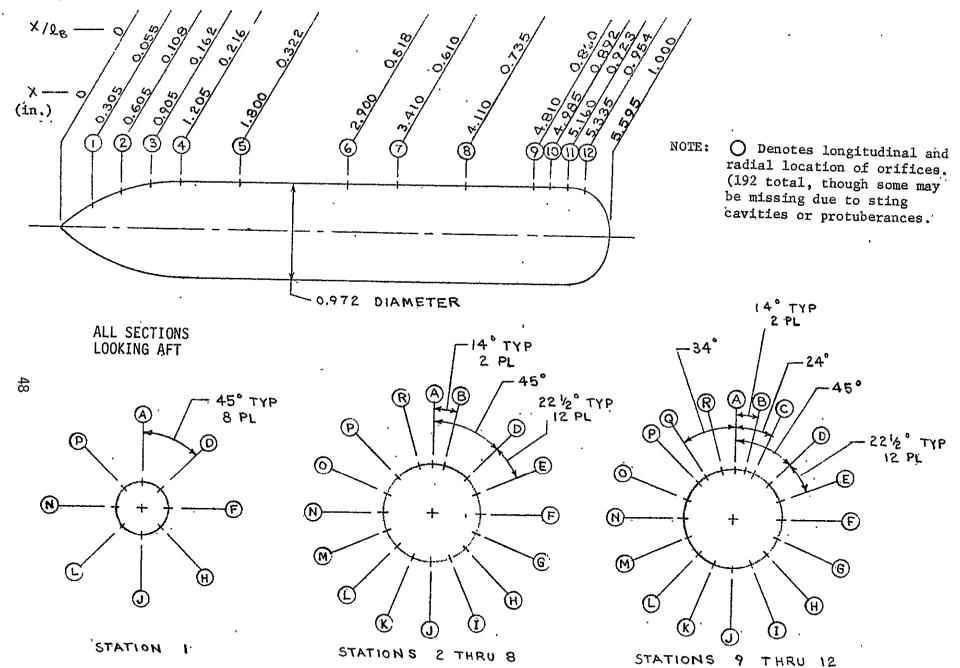
0.003-SCALE 324-INCH ET REFERENCE DIMENSIONS

DIMENSION	FULL SCALE	MODEL SCALE
Reference Area, S _{ref} (cross-sectional area of ET)	572.555 FT ²	0.742 IN. ²
Reference Length, ^l ref (ET diameter)	324 IN.	0.972 IN.
Reference Span, b _{ref} (ET diameter)	324 IN.	0.972 IN.
Moment Reference Point, MRP (dry weight c.g.) XMRP (from nose) YMRP ZMRP (model centerline)	1086.4 IN. 0 400 IN.	3.259 IN. 0 1.2 IN.
Base Area, A _b (cross-sectional area of ET)	572.555 FT ²	0.742 IN. ²

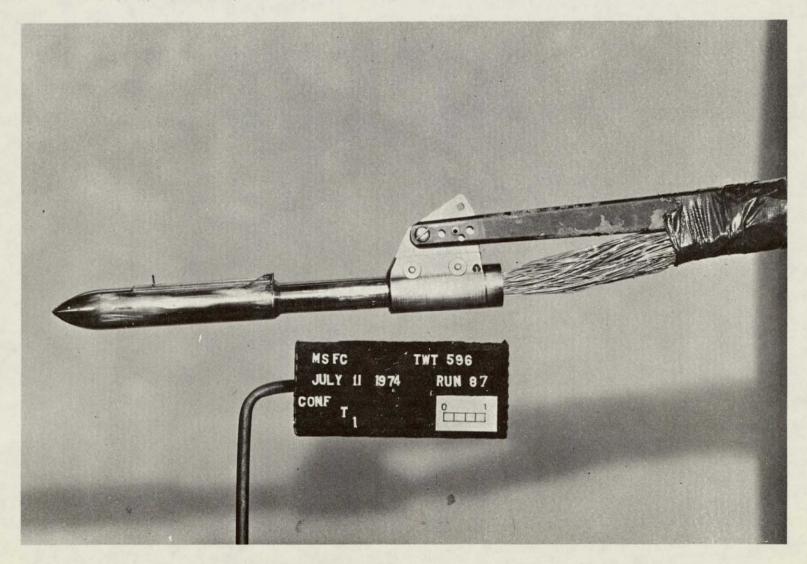




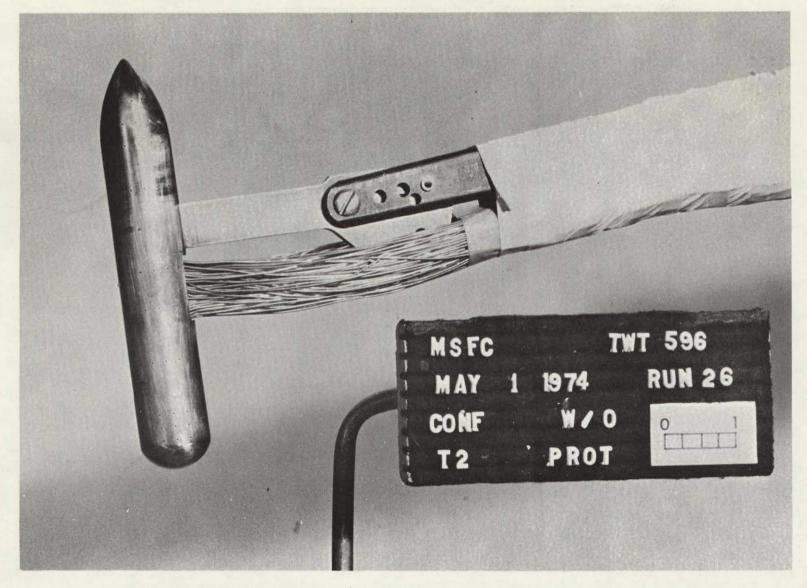
GENERAL ARRANGEMENT OF MSFC MODEL NO. 460, CONFIGURATION T1 EXTERNAL TANK WITH PROTUBERANCES Figure 2. MODEL SKETCHES



b. EXTERNAL TANK MODEL PRESSURE ORIFICE LOCATIONS Figure 2. CONCLUDED



EXTERNAL TANK MODEL NO. 460, CONFIGURATION T₁ TAIL-MOUNTED WITH PROTUBERANCES Figure 3. MODEL PHOTOGRAPHS



b. EXTERNAL TANK MODEL NO. 460, CONFIGURATION T₂ SIDE-MOUNTED WITHOUT PROTUBERANCES Figure 2. CONCLUDED

DATA FIGURES

VOLUME 1--Pages 1-720 VOLUME 2--Pages 721-1200 VOLUME 3--Pages 1201-2000 VOLUME 4--Pages 2001-2740

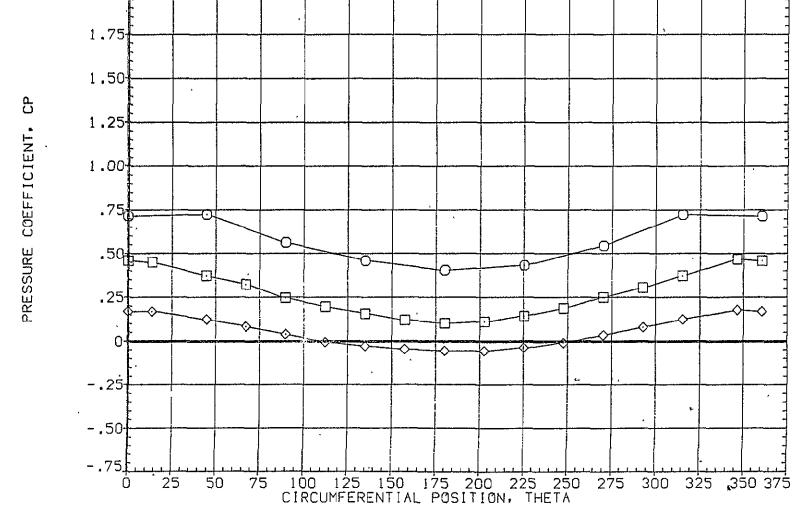


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1201

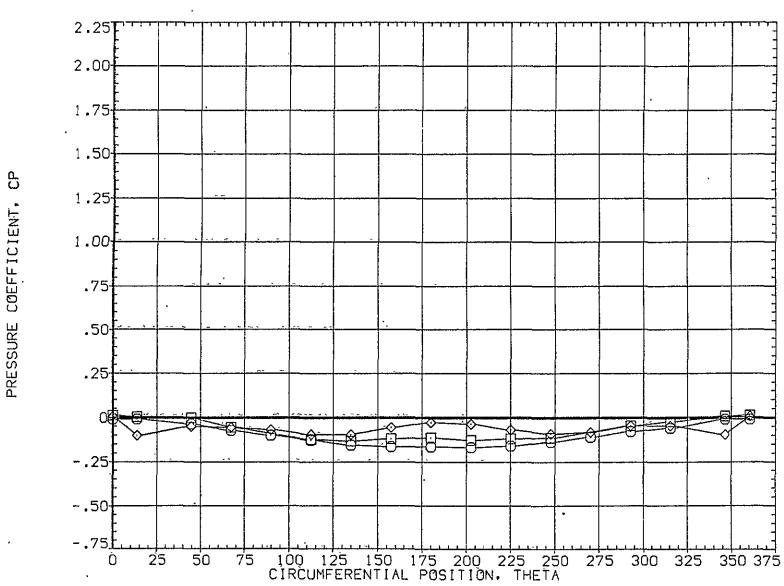


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1202

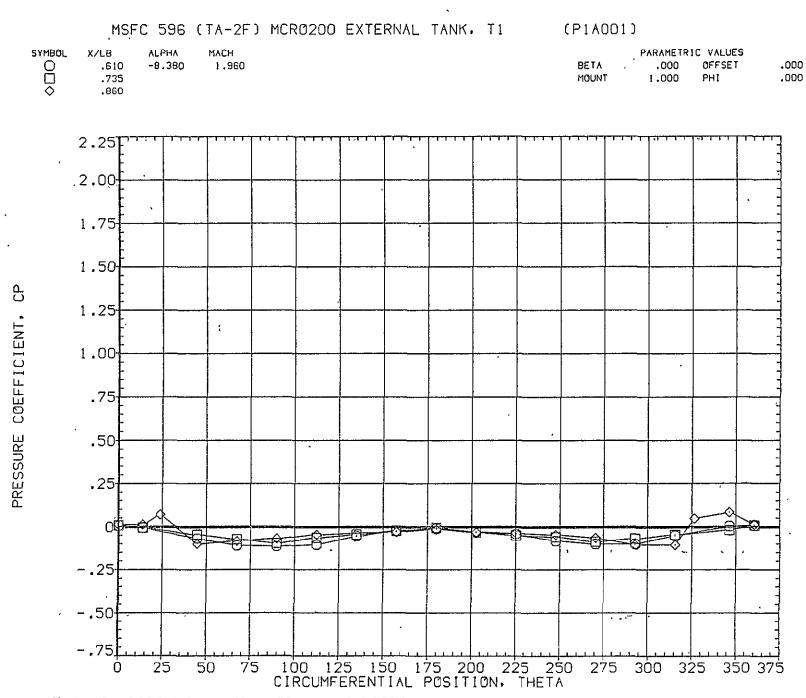


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

.954

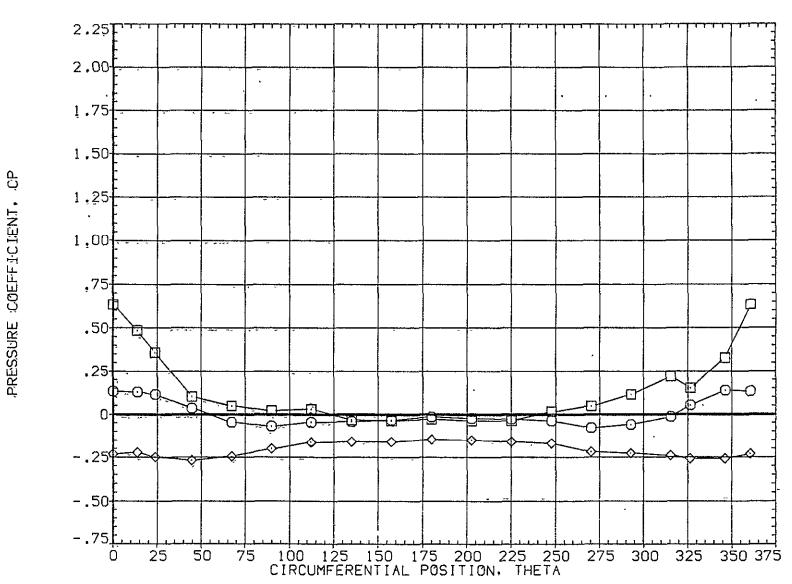


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1204

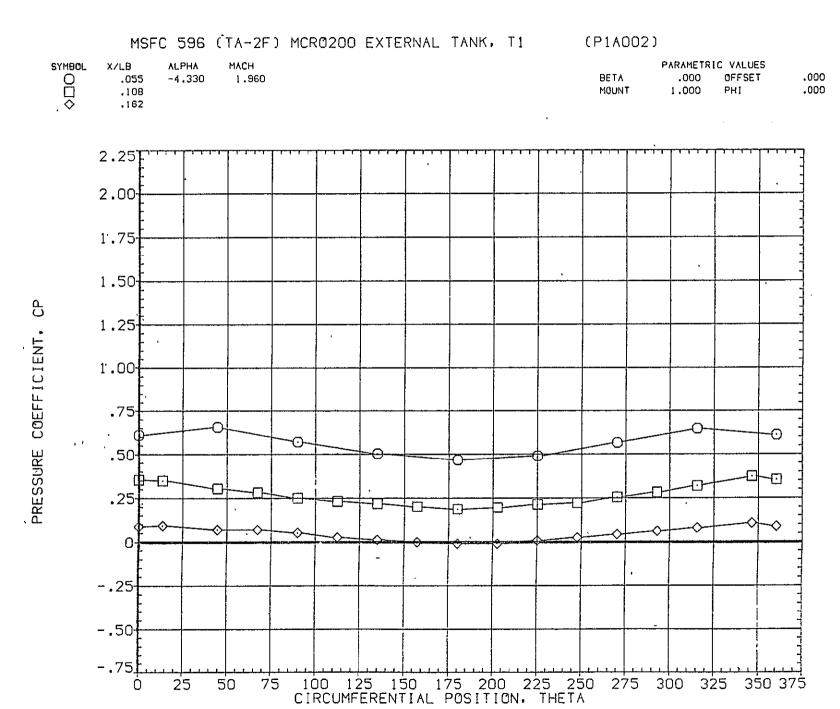


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1205

SYMBOL	X/LB	ALPHA	MACH	Į.	PARAMETRIC VALUES			
0	.216	-4.330	1.960	BETA	.000	OFFSET	.000	
	.322			MOUNT	1.000	PHI	.000	
Δ.	.518							

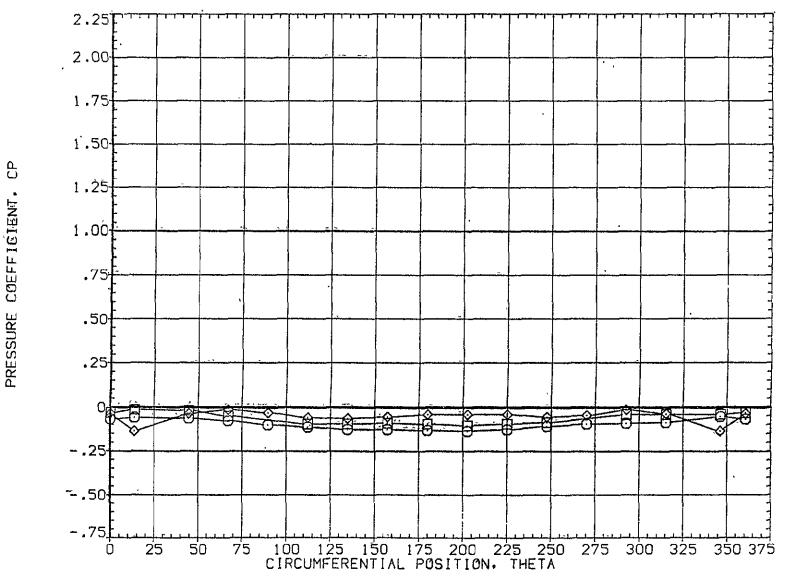


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

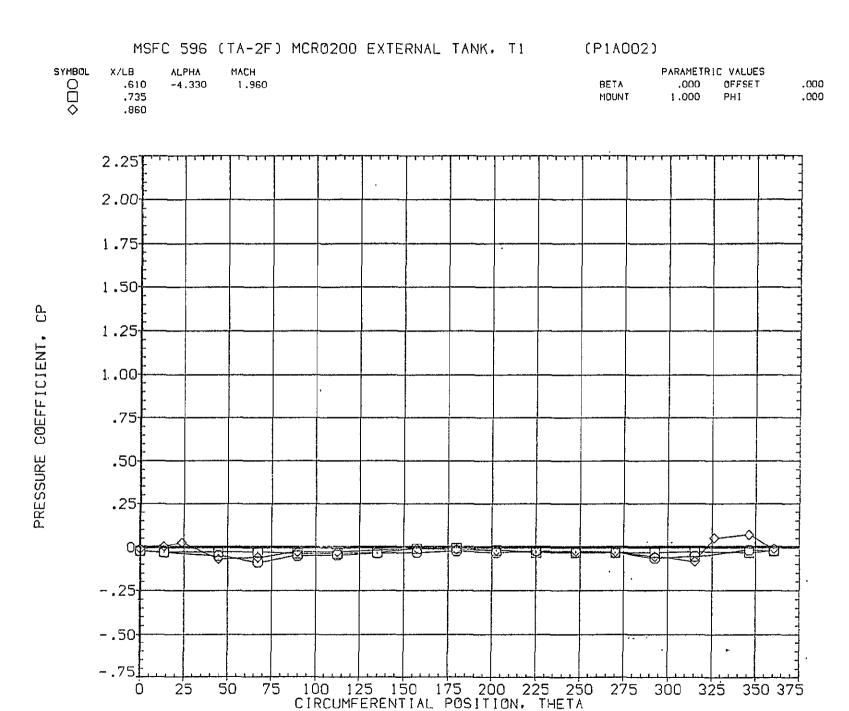
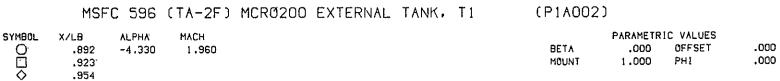


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T-1 WITH PROTUBERANCES.

PAGE 1207



.954

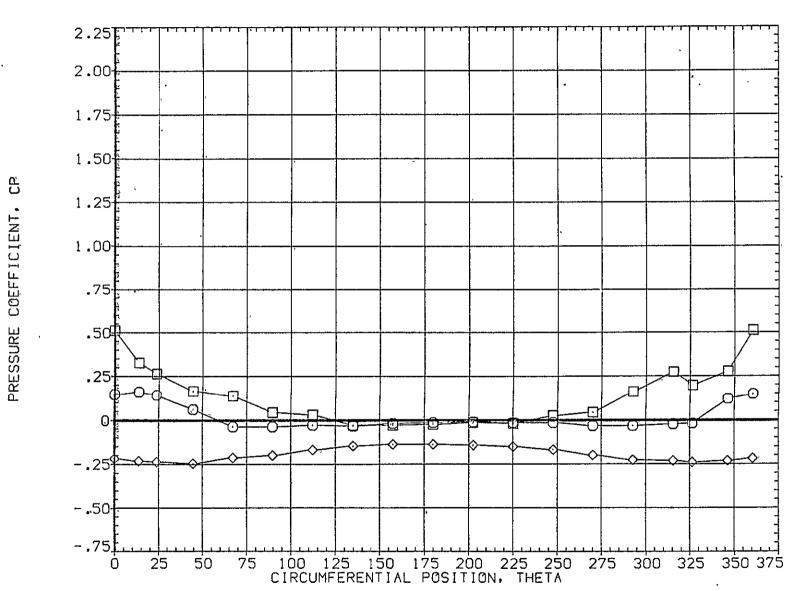


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1208

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A003) SYMBOL PARAMETRIC VALUES X/LB **ALPHA** MACH 000 .000 .055 -.280 1.960 BETA .000 OFFSET 1.000 PHI .000 .108 MOUNT .162 2.25

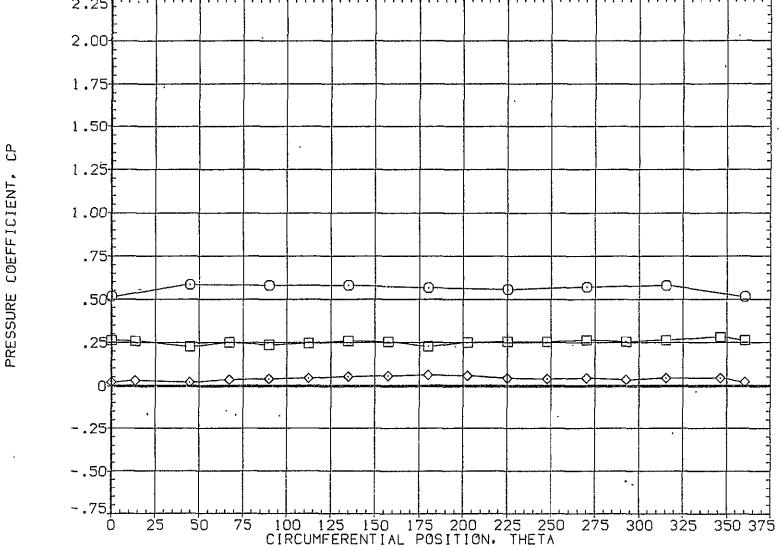


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1209

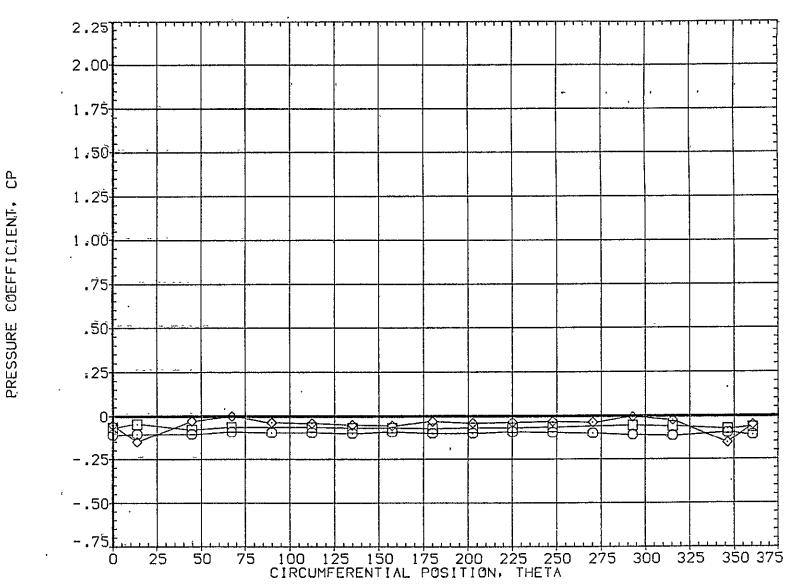


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1210

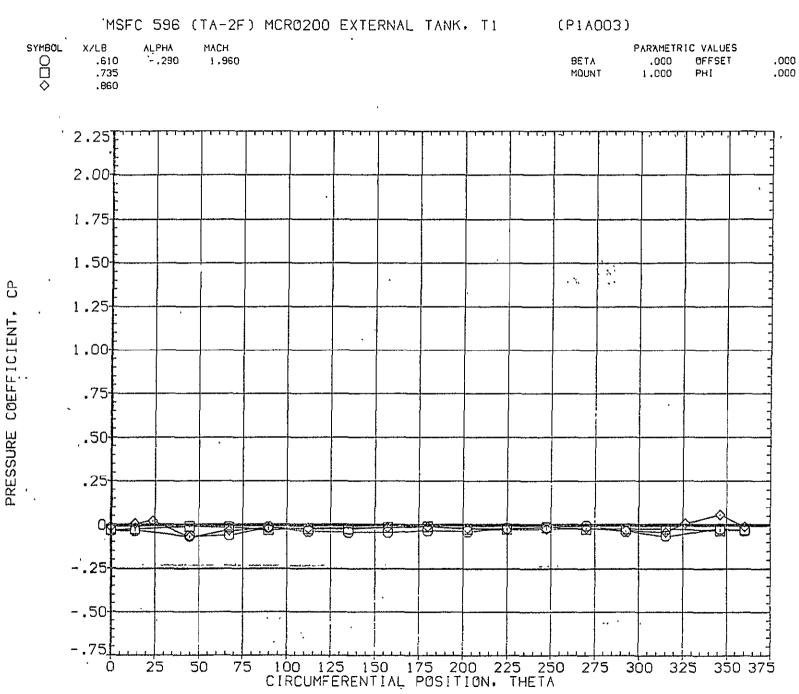


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1211



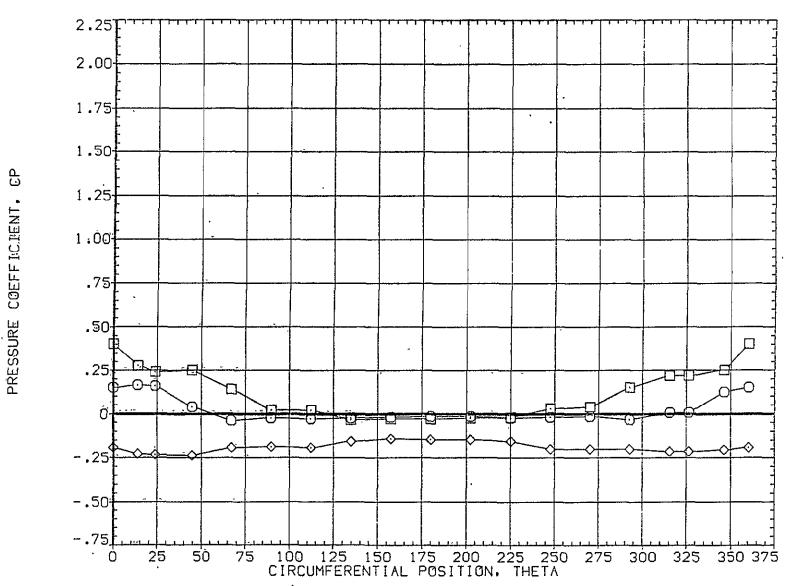


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1212

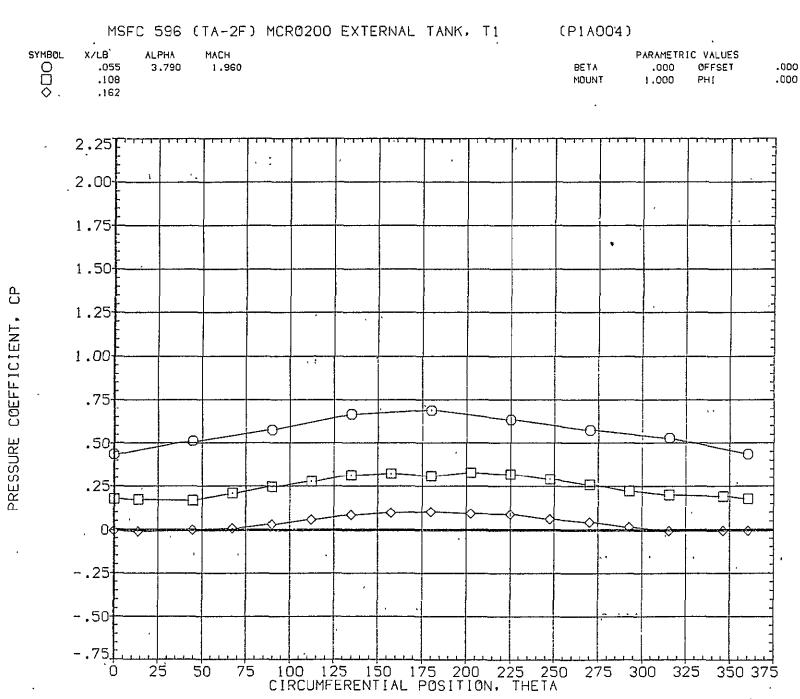


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1213

MACH

SYMBOL

X/LB

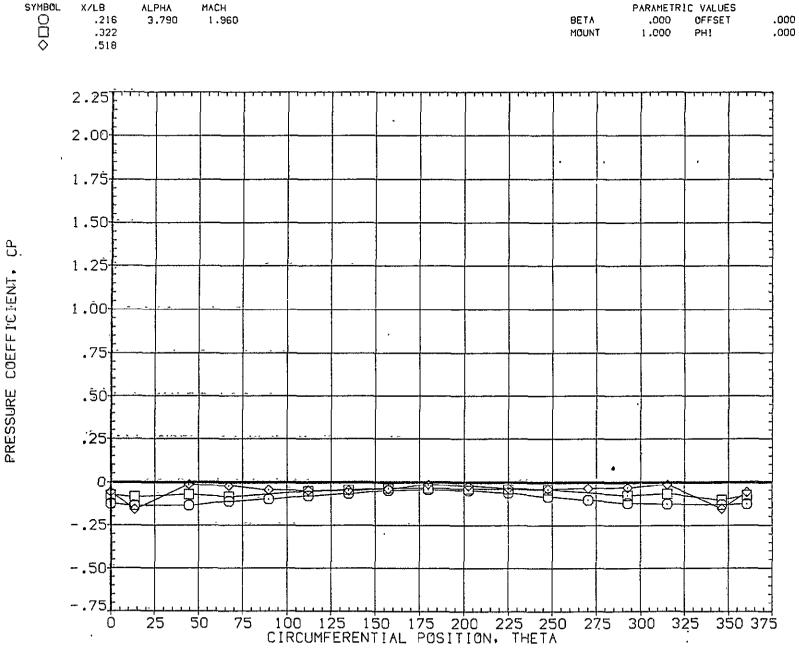


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1214

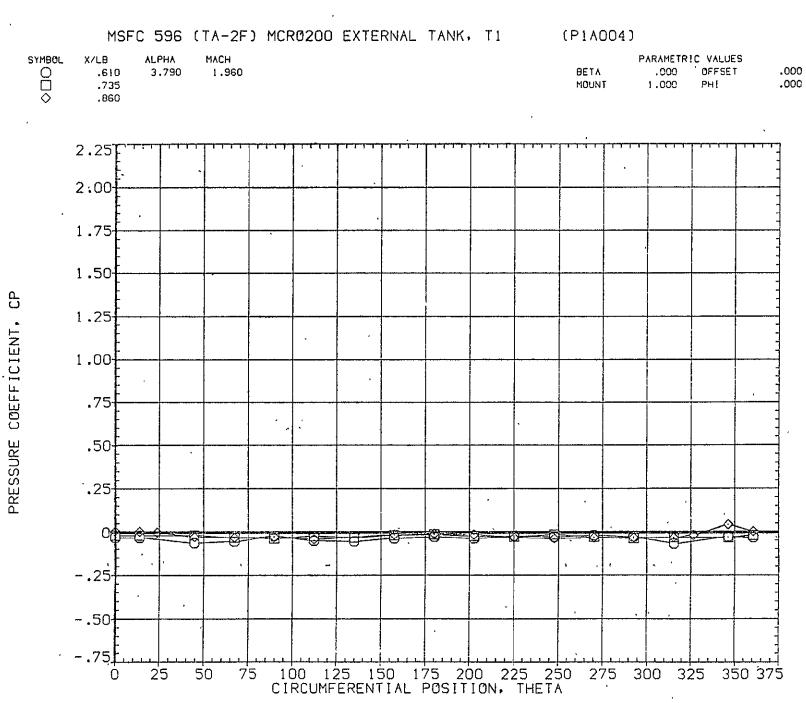


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1215

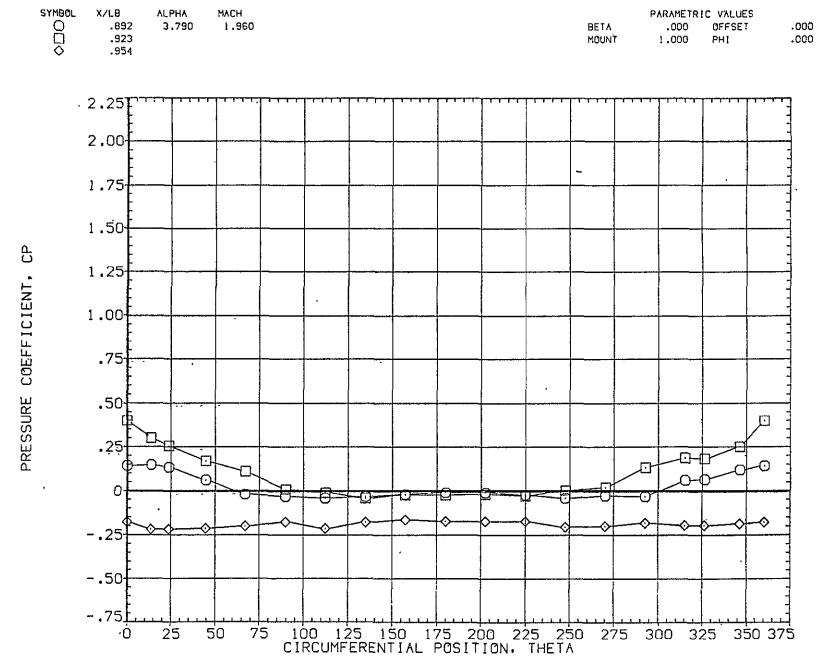


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1216

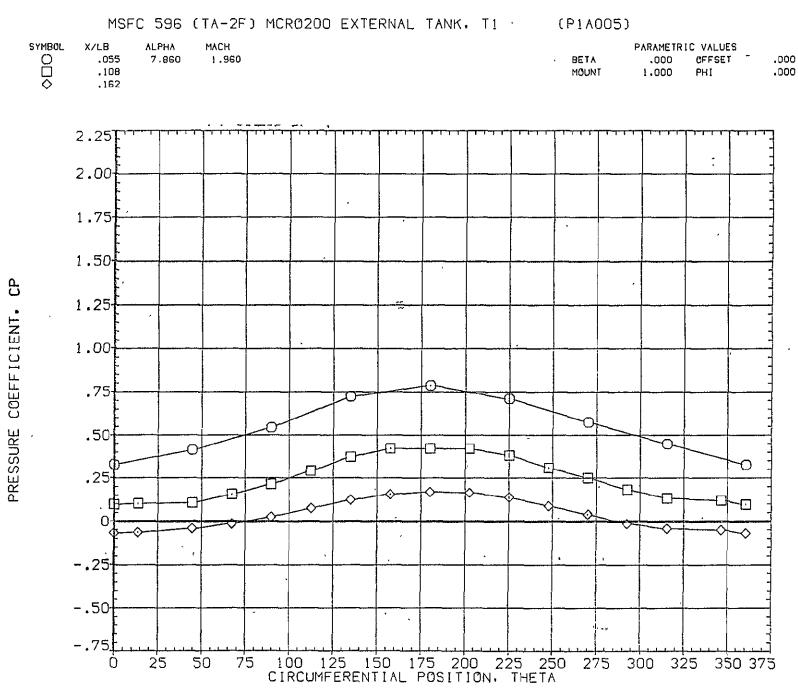


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1.WITH PROTUBERANCES
PAGE 1217

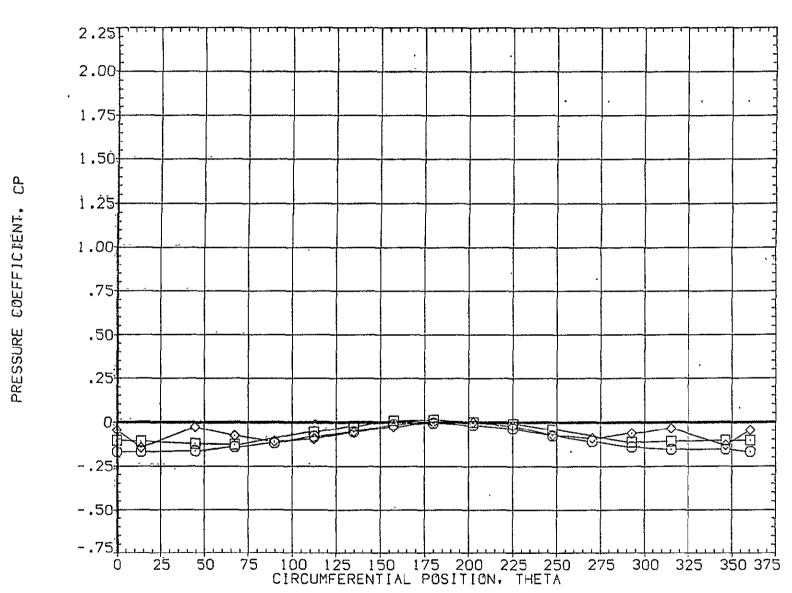


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1218

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1219

50

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

- 275 300 325 350 375



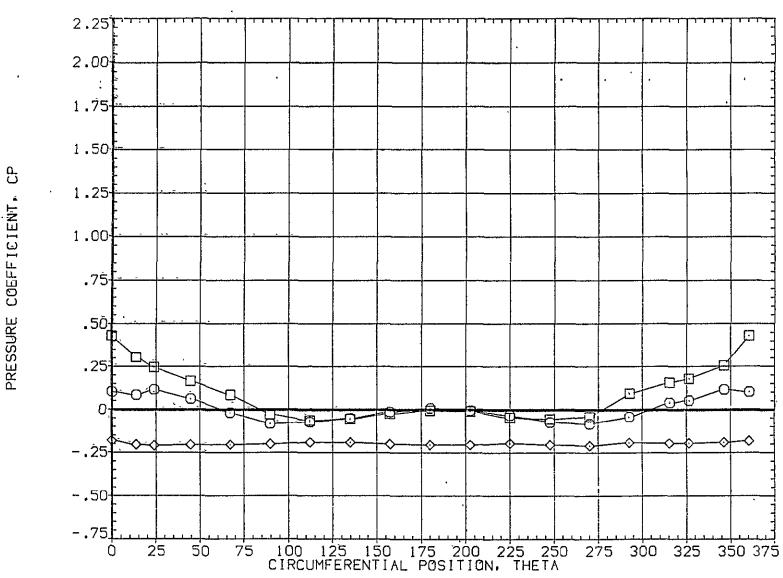
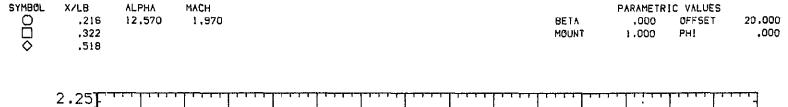


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1220

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1221



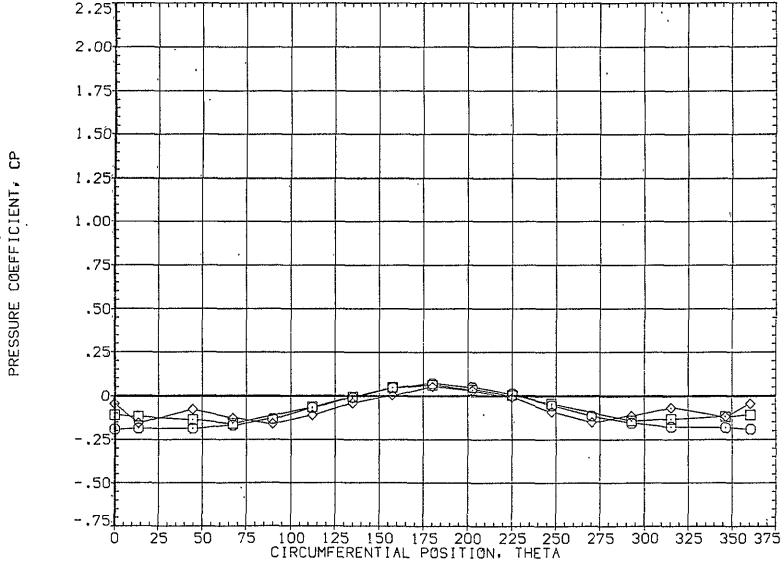


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1222

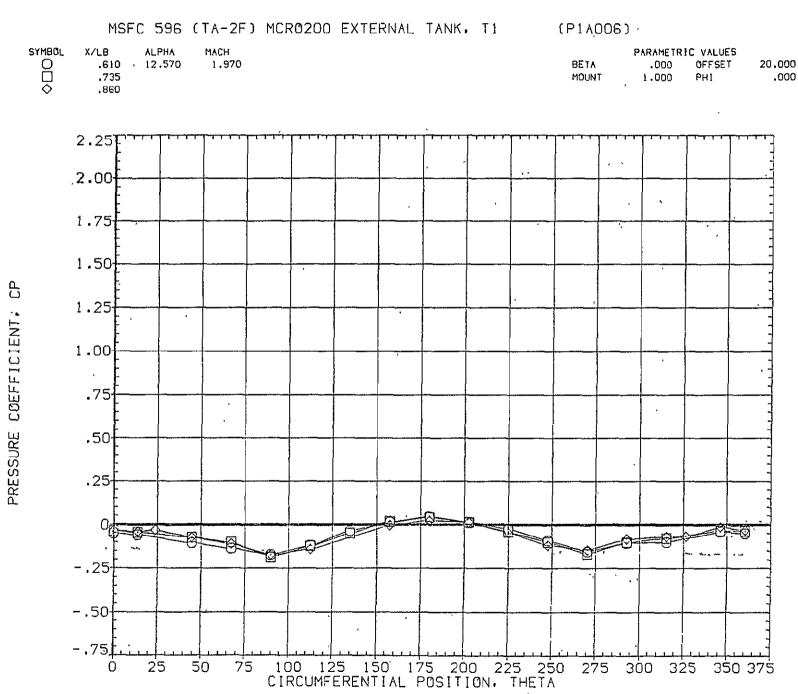


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

9

COEFFICIENT,

PRESSURE

X/LB

ALPHA

MACH

PARAMETRIC VALUES

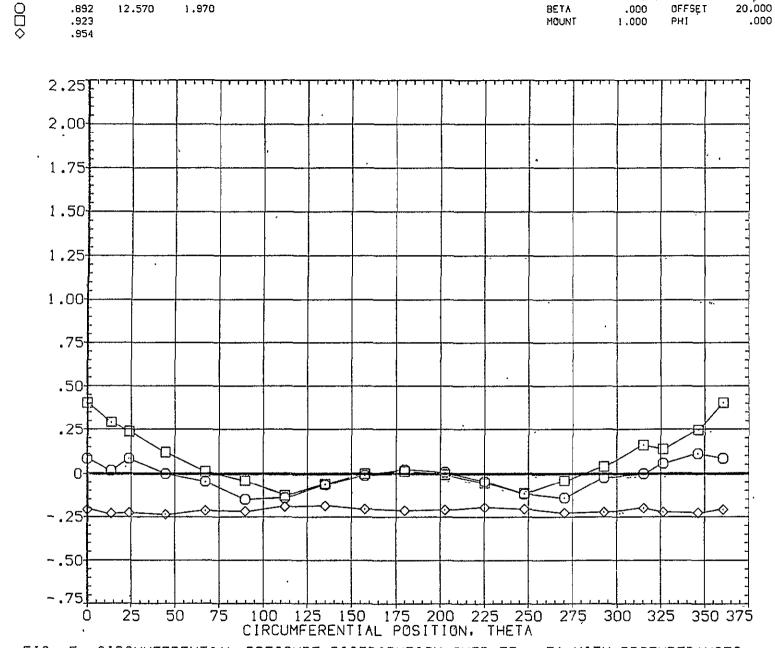


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1224

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1225

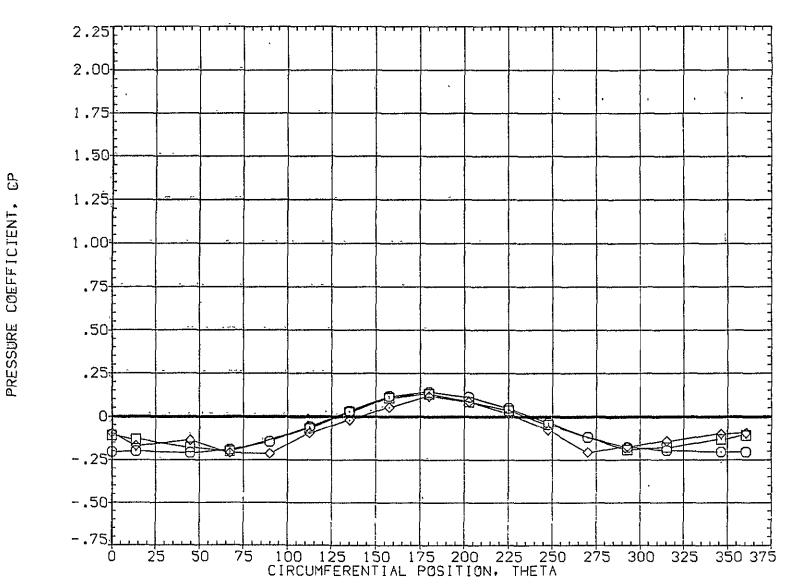


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1226

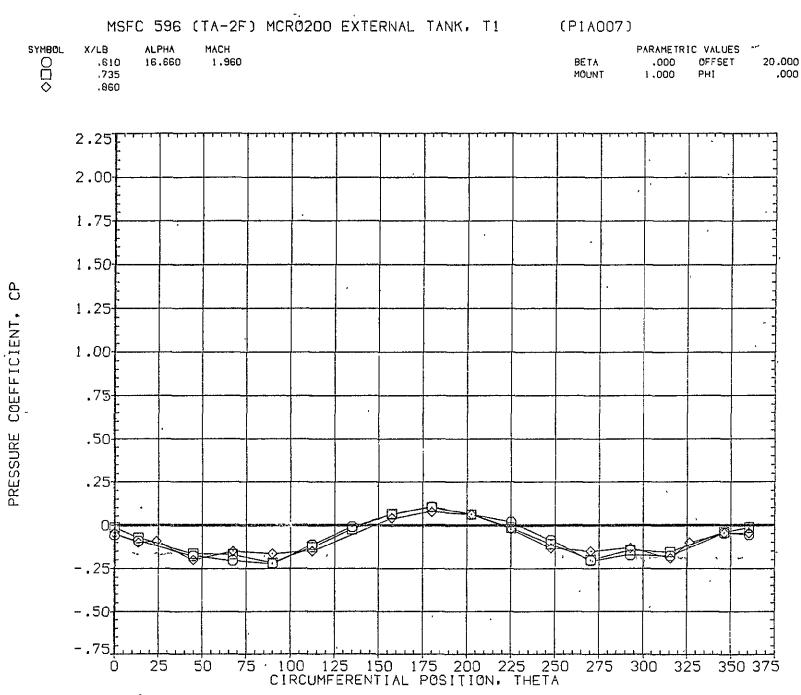


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1227

PARAMETRIC VALUES

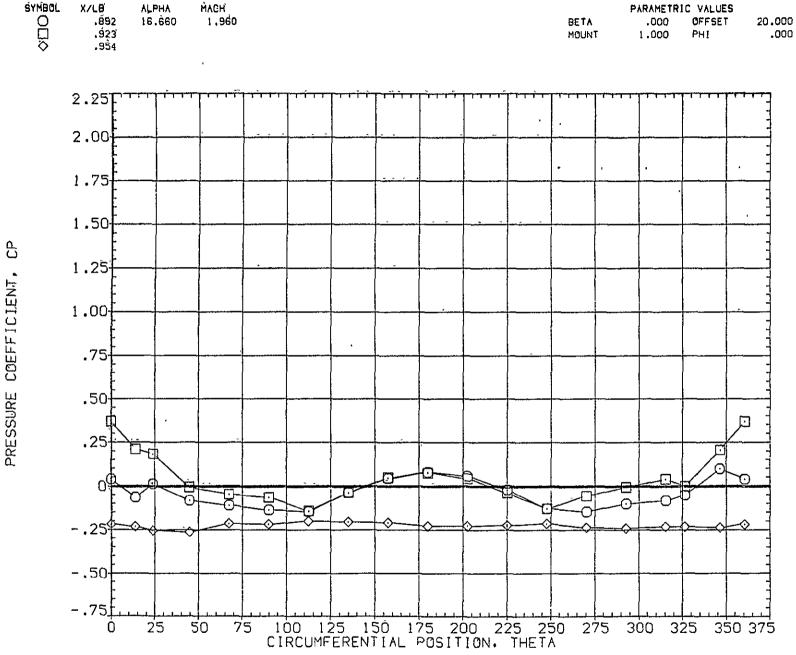


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1228

. FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



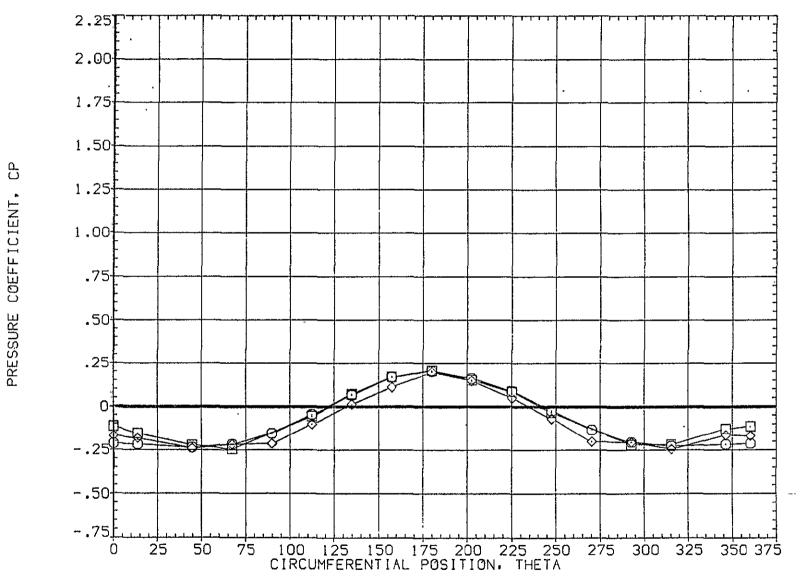


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1230

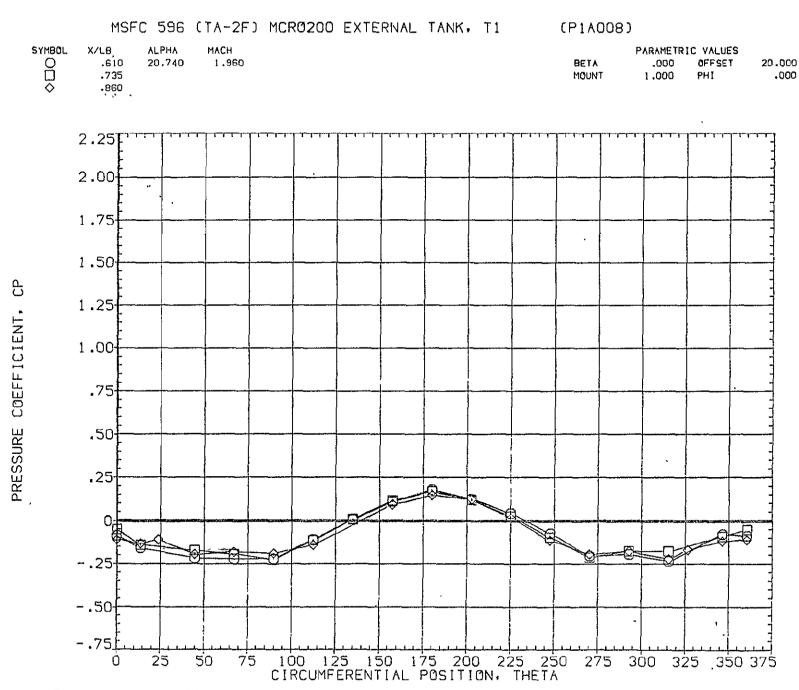


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1231

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1232

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

50

75

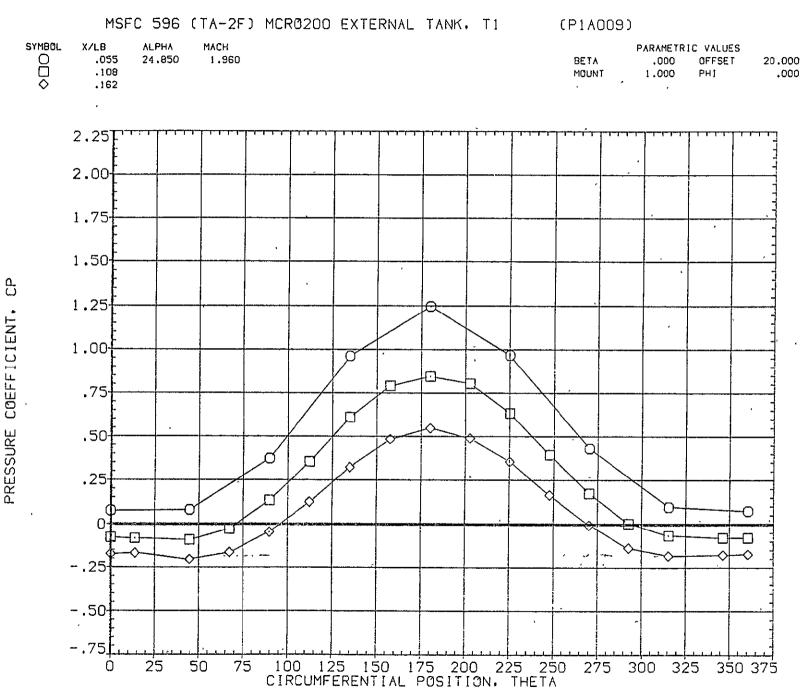


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1233



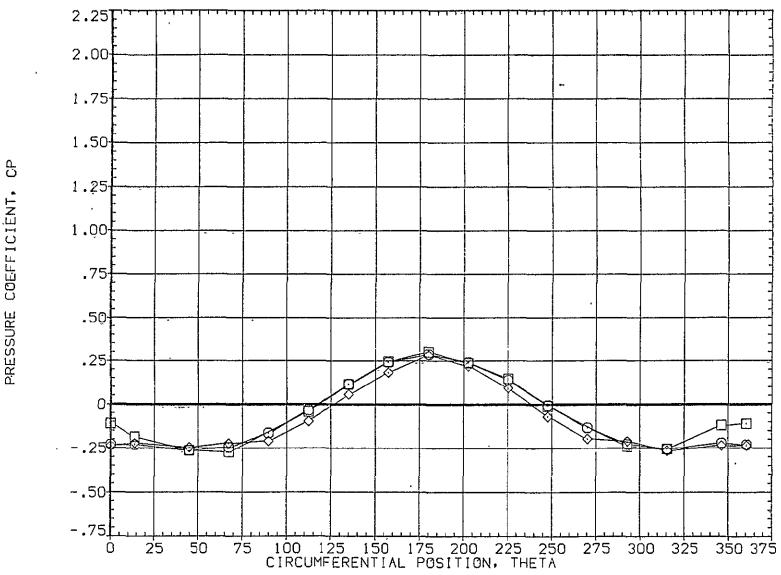


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1234

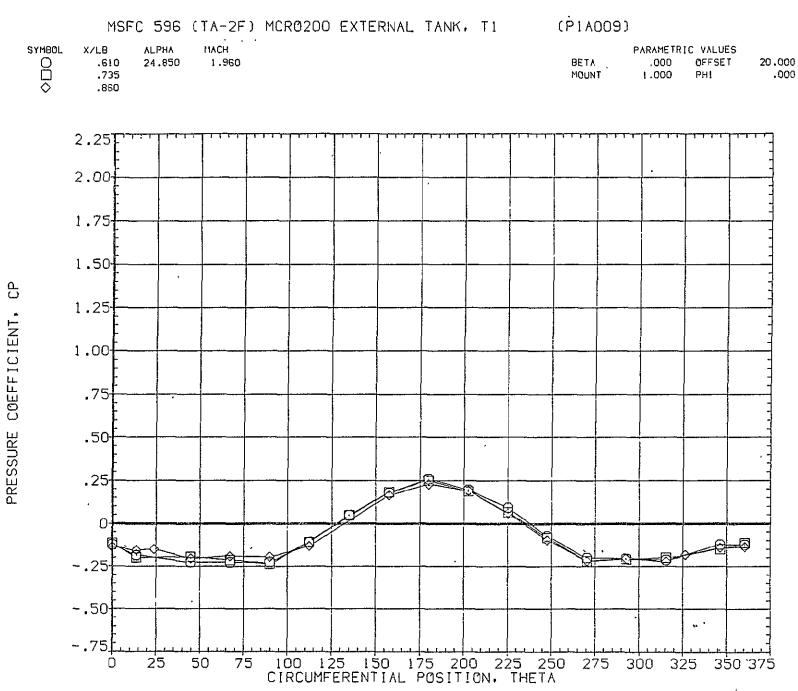


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1235

SYMBOL	X/LB	ALPHA	MACH		PARAMETRIC VALUES			
9	.892	24.850	1.960	BETA	.000	OFFSET	20.000	
Ä	.923 .954			MOUNT	1.000	PH!	.000	
~	,554							

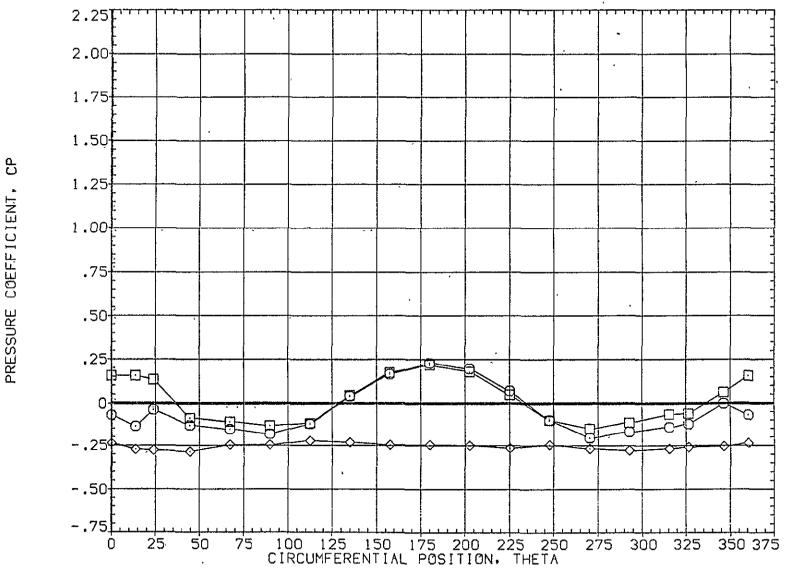


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1236

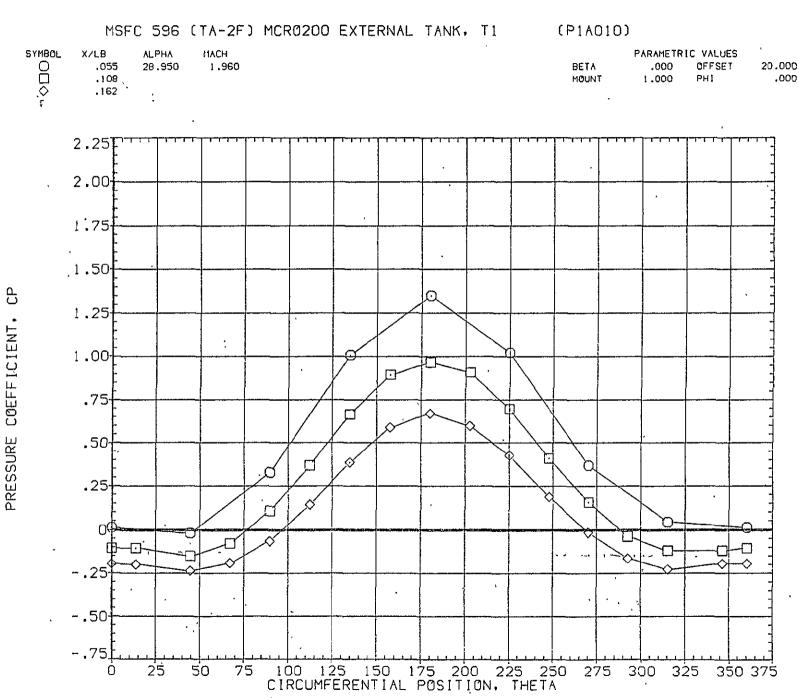


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1237



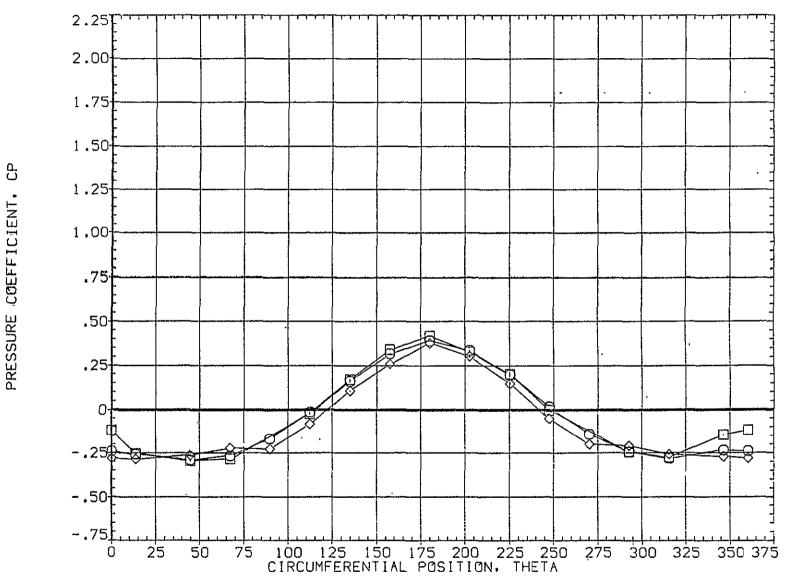


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1238

100 .125 150 175 200 225 250 275 300--325 350 375 CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1239

-.50

-.75L

50

75

X/LB

ALPHA

MACH

(P1A010)

PARAMETRIC VALUES

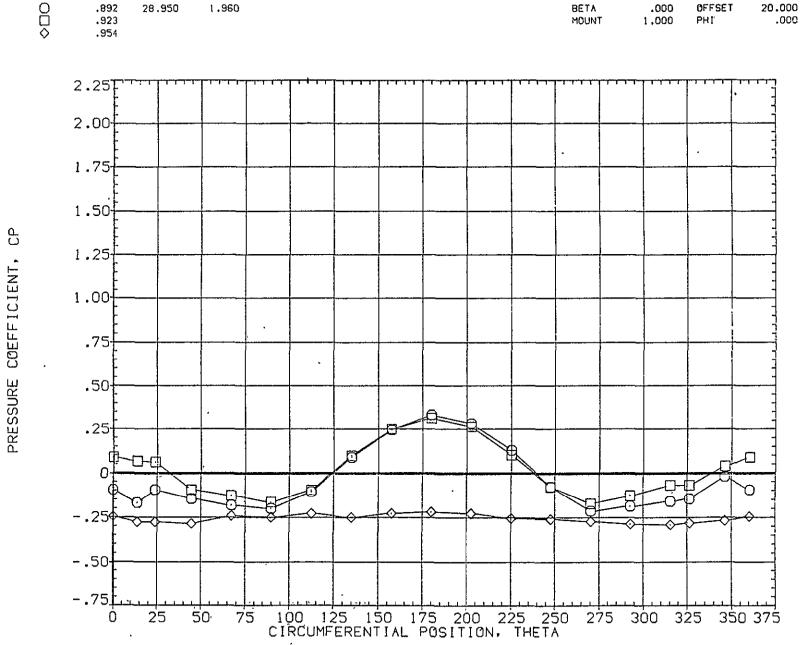


FIG. 5 CIRCUMFERENTIAL PRÉSSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1240

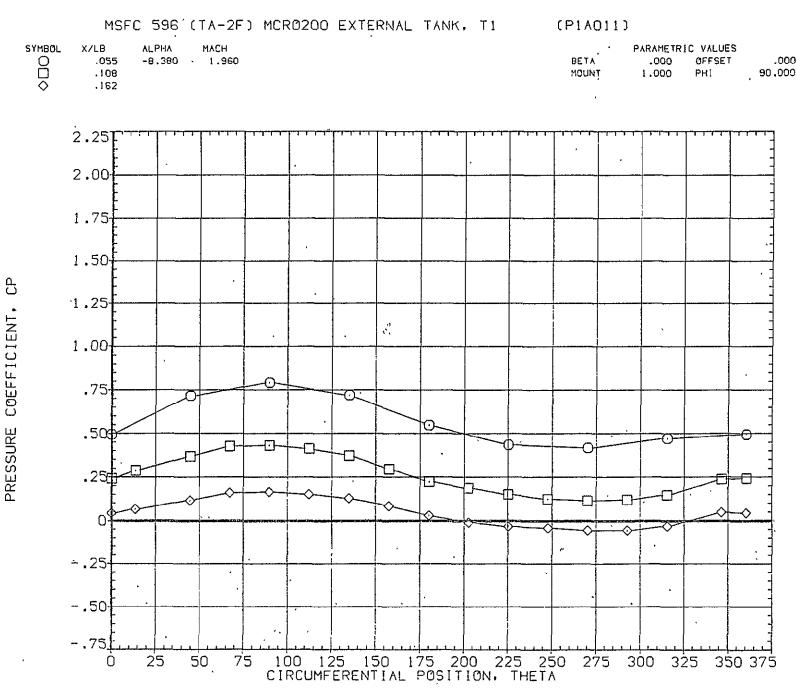


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER-ET - TI WITH PROTUBERANCES

PAGE 1241

X/LB

ALPHA

MACH

PARAMETRIC VALUES

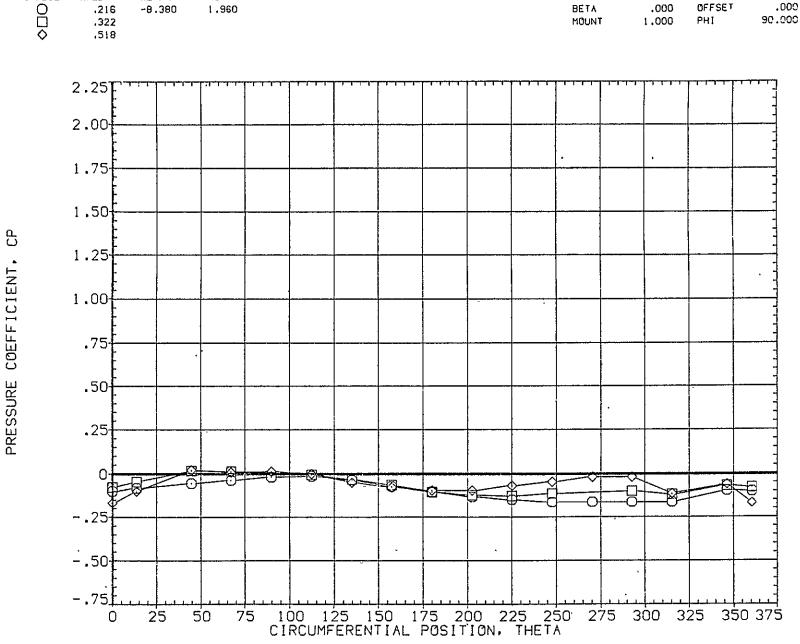


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1242

X/LB

ALPHA

MACH

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A011)

PARAMETRIC VALUES

000 .610 -8.380 1,960 OFFSET .000 BETA .000 .735 TAUON 1.000 PH! 90.000 .860 2.25 2.00 1.75 ,1.50- Ω 1.25 COEFF ICIENT, 1.00 .75 PRESSURE .50-.25 -.25 -.50 -.75] 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1243

X/LB

.892

ALPHA -8.380.

MACH

1,960

CLIVOLIA

BETA

PARAMETRIC VALUES

OFFSET

.000

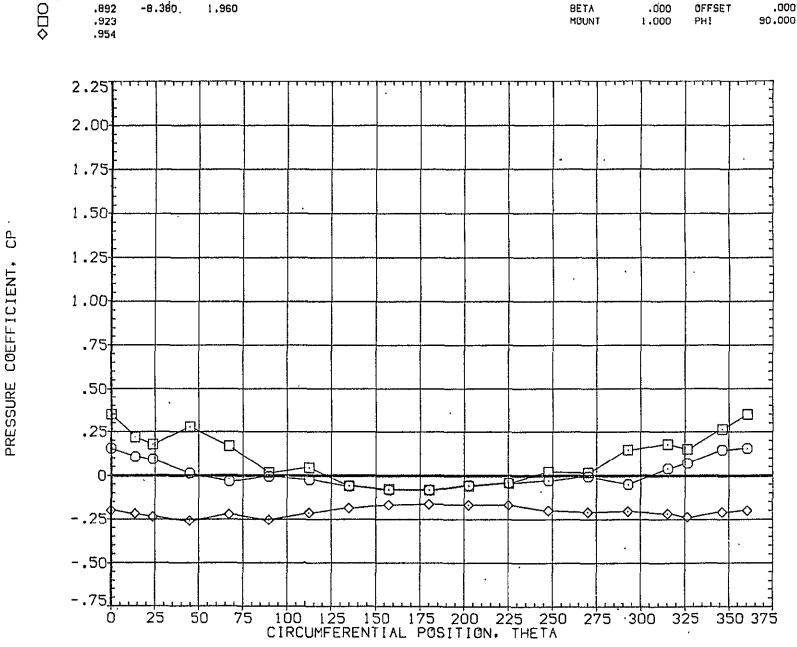


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1244

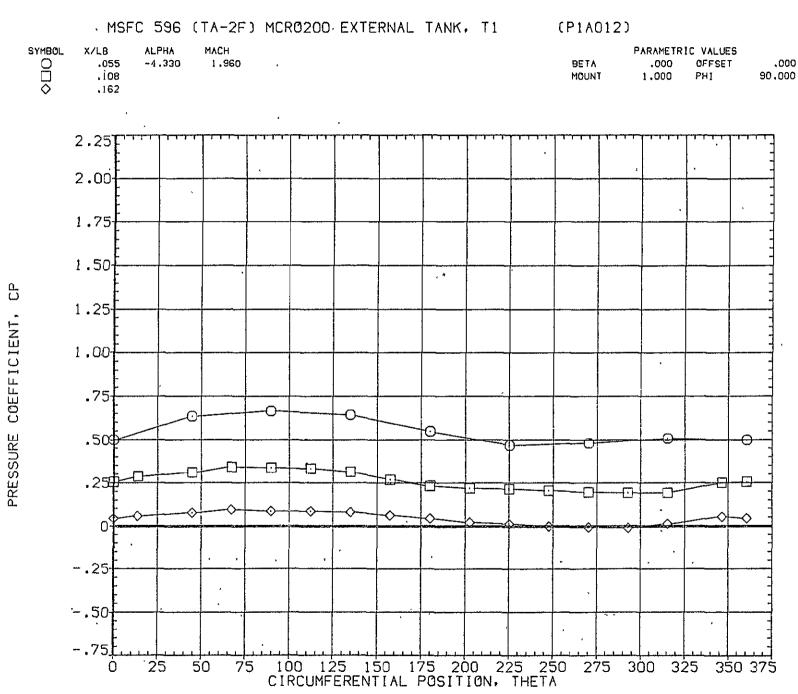


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1245

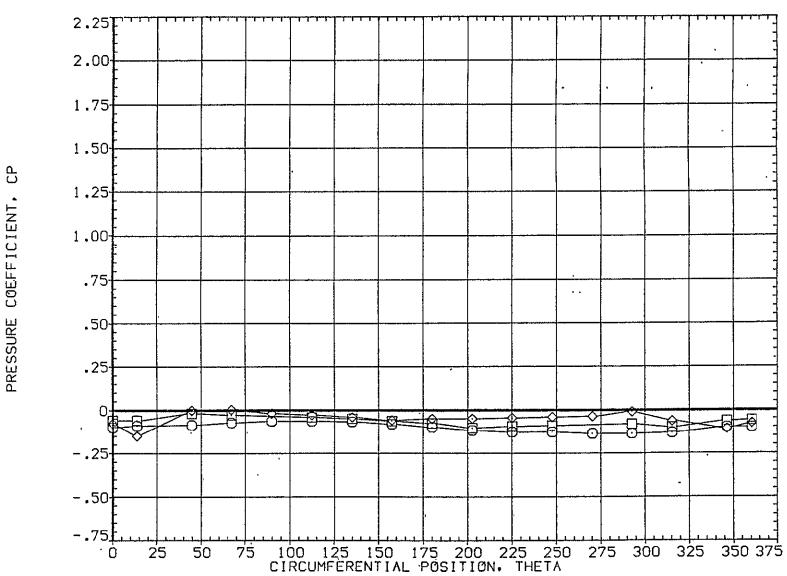


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1246

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (PIA012)

SYMBOL

X/LB

.610

ALPHA

-4.330

MACH

1,960

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

000 1.000 PHI 90,000 .735 MOUNT. .860 2.251 2.00 1.75 1.50 С 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

TAUON

1.000

PHI

90.000

SYMBOL

000

.923

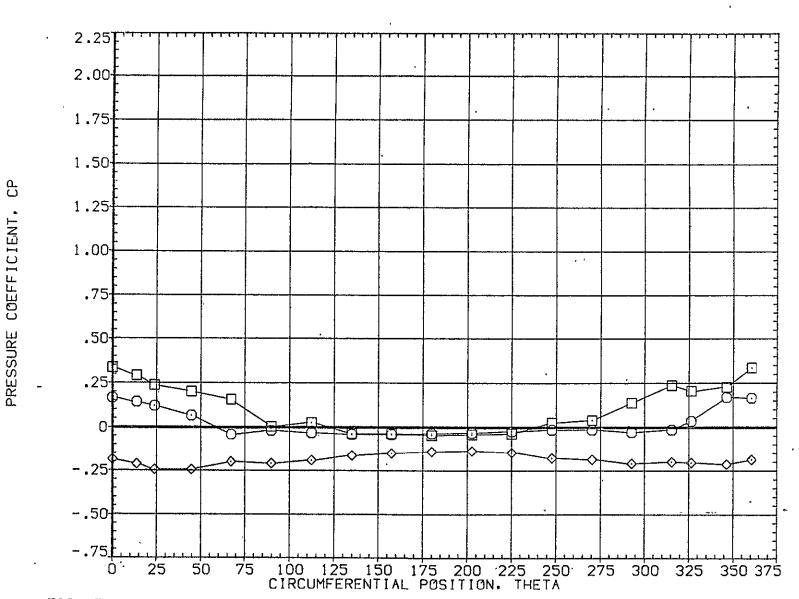


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1248

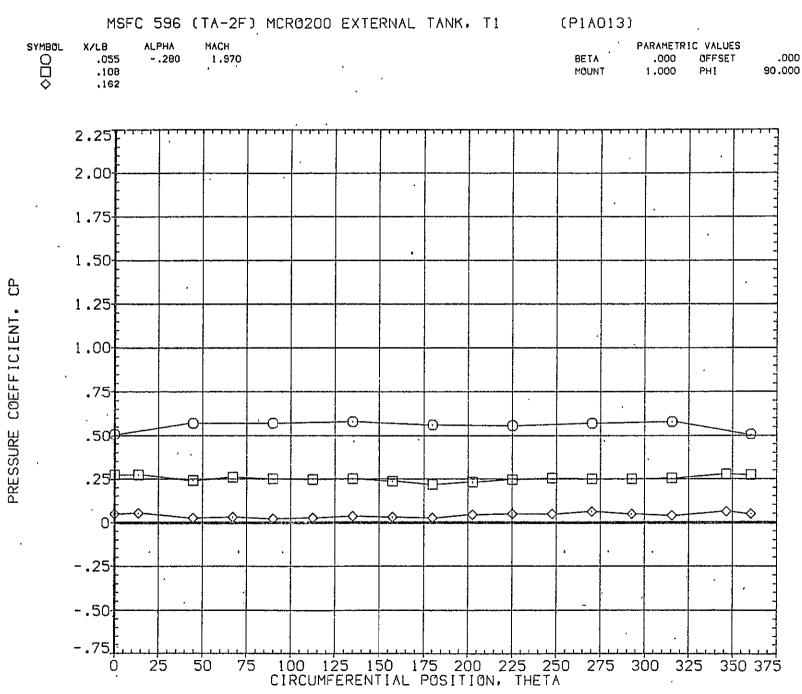


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1249



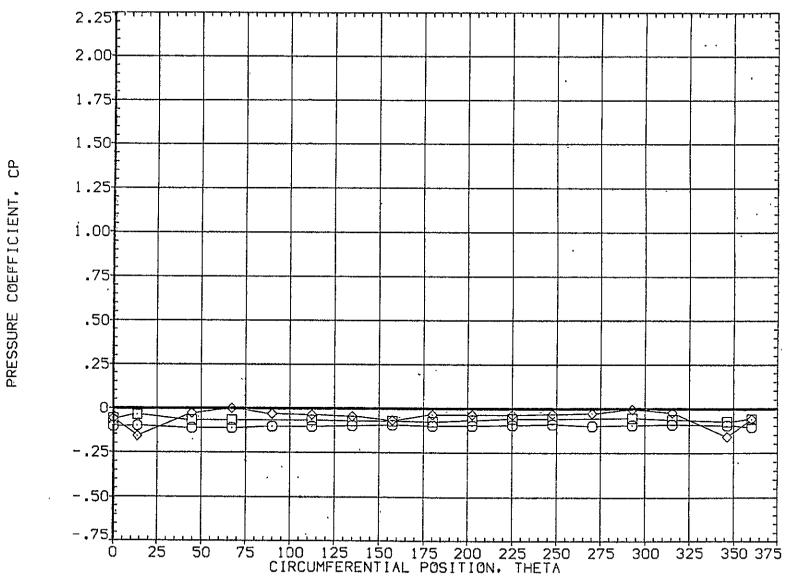


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1250

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1251

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

275 300 325 350 375

~.50

-.75h

25

50

75

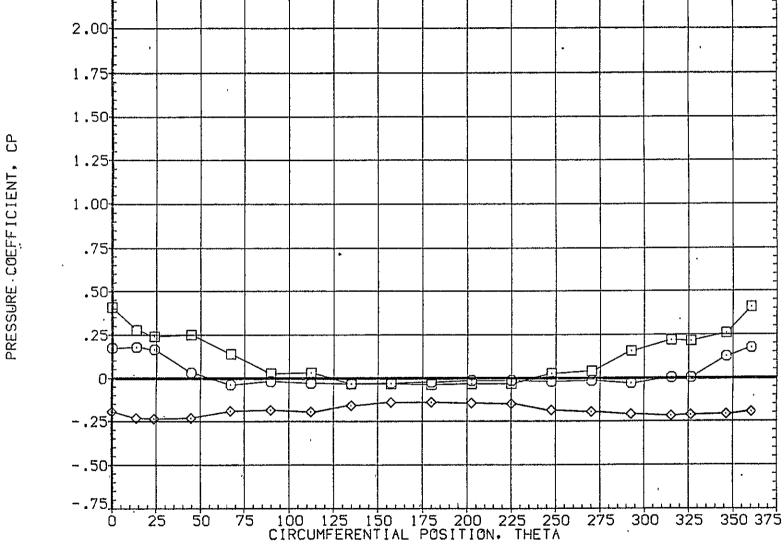


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1252



SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 3,790 . 1,960 OFFSET .000 .055 BETA .000 .108 MOUNT 1.000 PHI, 90.000 .162

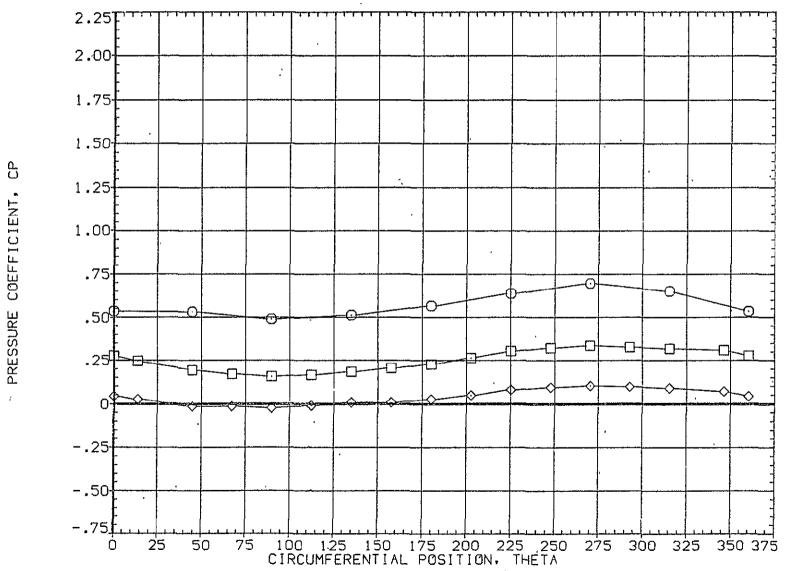


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

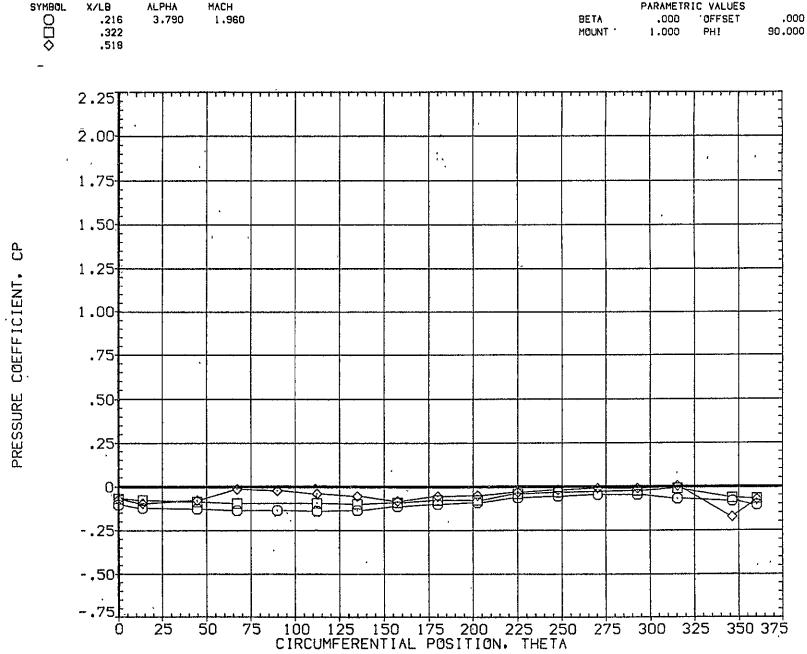


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1254

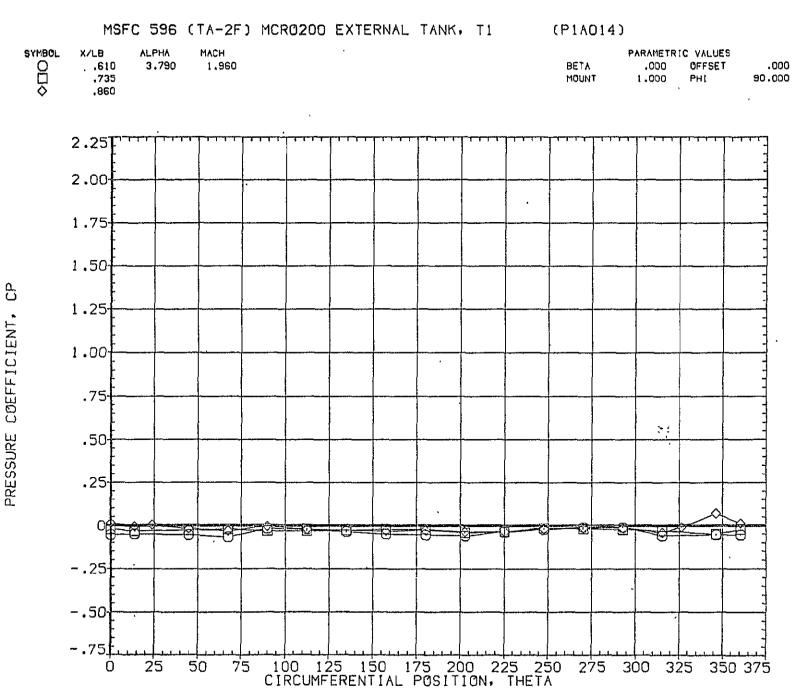


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1255

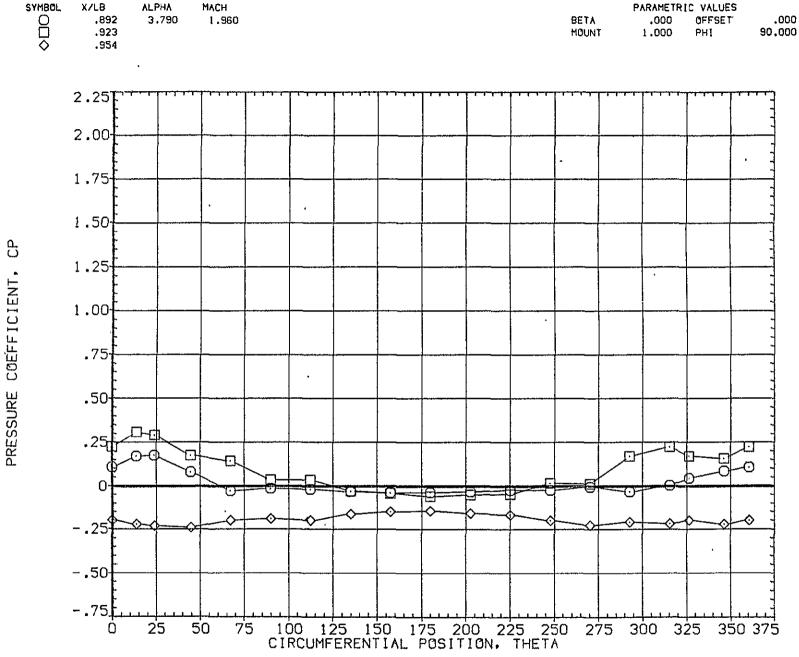


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1256

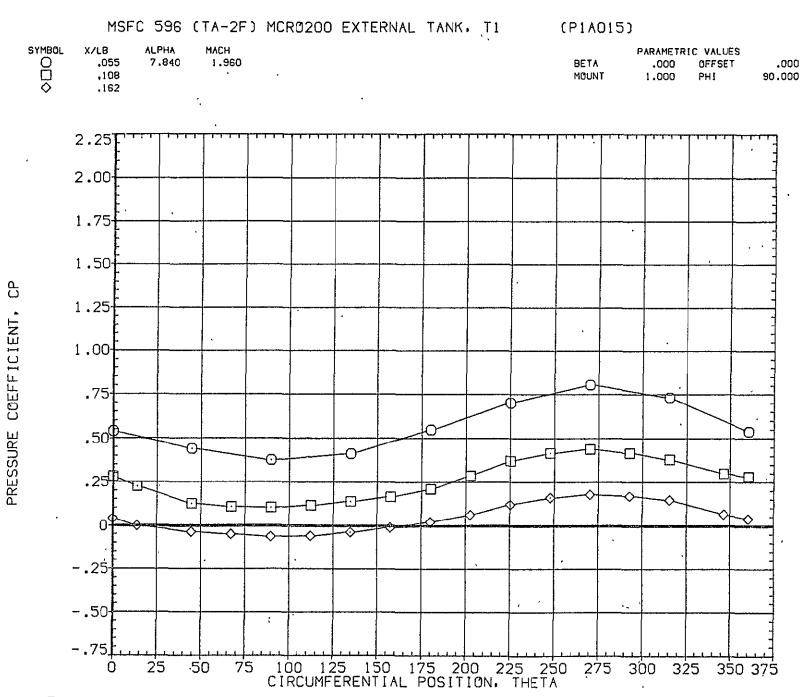


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

ALPHA

MACH

SYMBOL X/LB

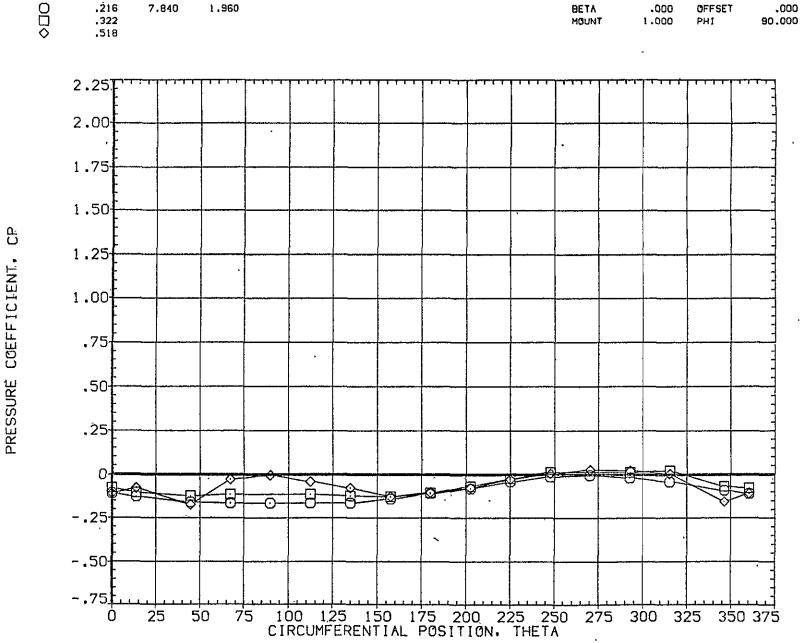


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGÉ 1258

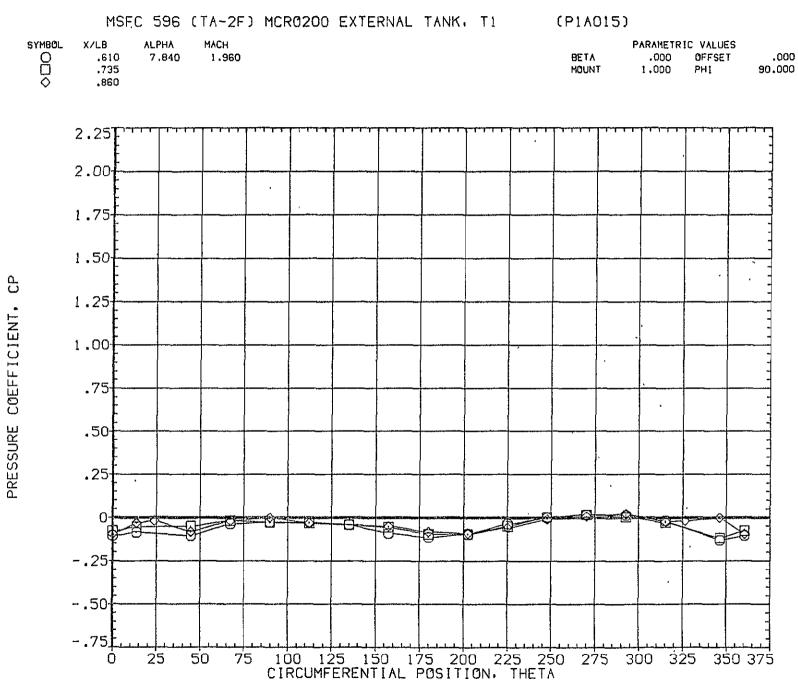


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1259

X/LB

ALPHA

MACH

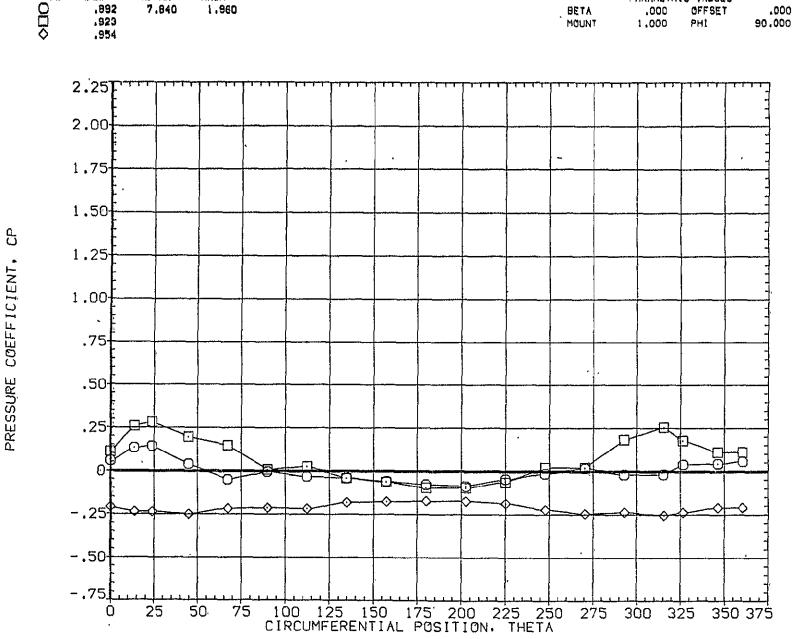


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1260

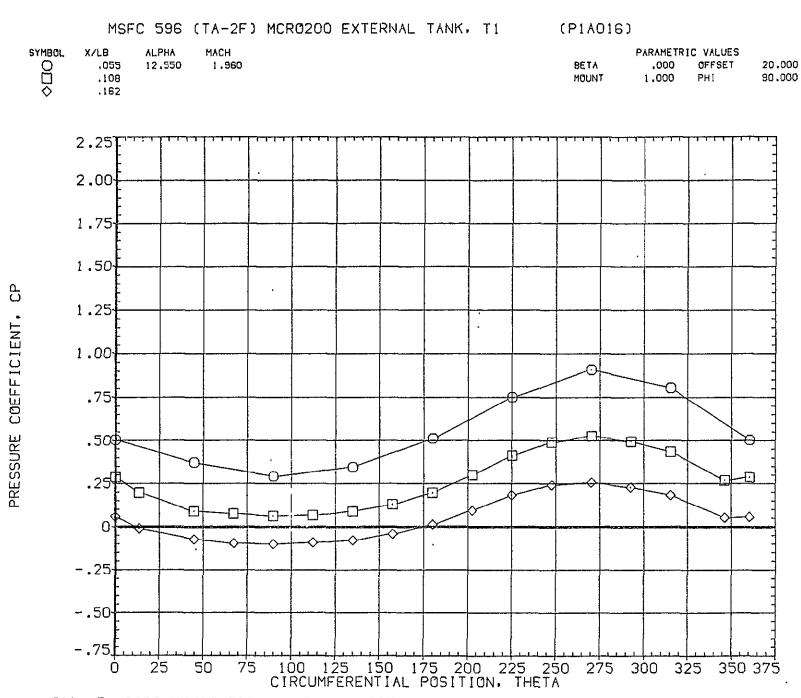


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

SYMBOL	X/LB	ALPHA	MACH	PARAMETR	PARAMETRIC VALUES				
0	.216	12.550	1.960	BETA .000	OFFSET	20.000			
	.322			MOUNT 1.000	PHI	90.000			
\Diamond	.518								

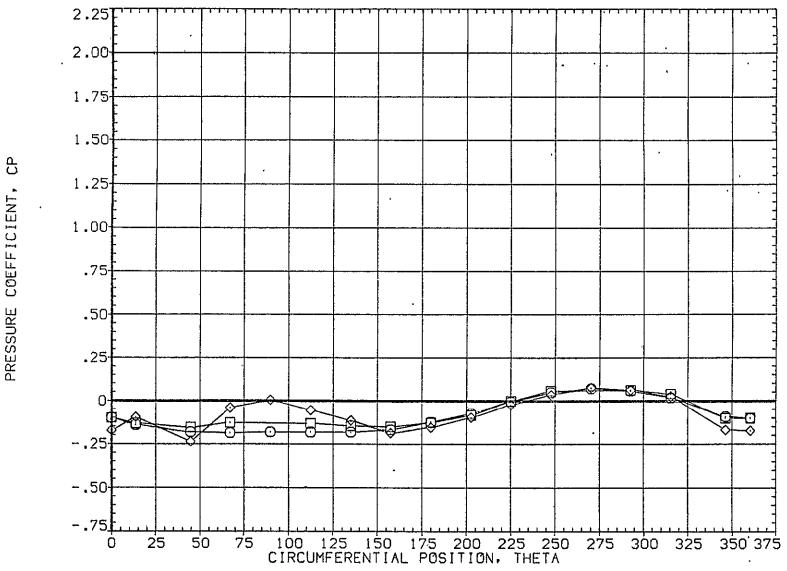


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1262

(P1A016) MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 PARAMETRIC VALUES · SYMBOL X/LB ALPHA MACH .000 OFFSET 20.000 000 1,960 BETA .610 12,550 1.000 PHI 90,000 MOUNT .735 .860 2.25 2.00 1.75 1.50 S 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.50 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50 25 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1263





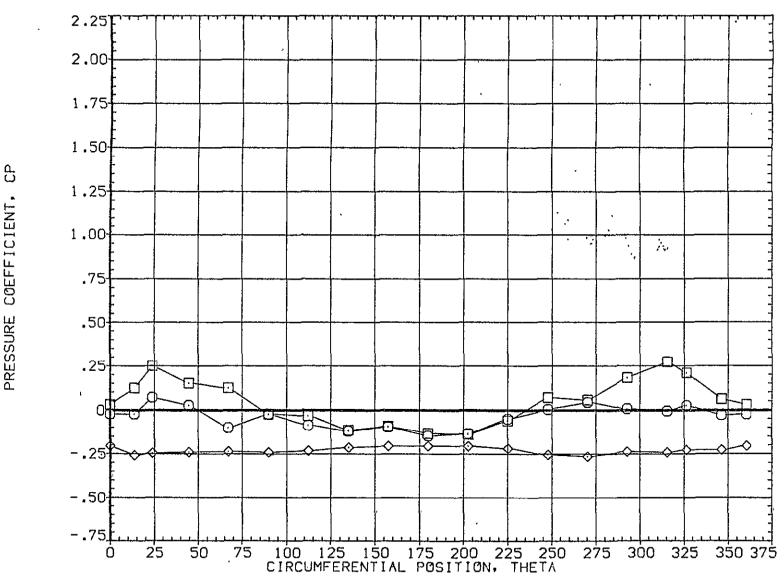
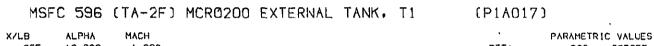


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1264



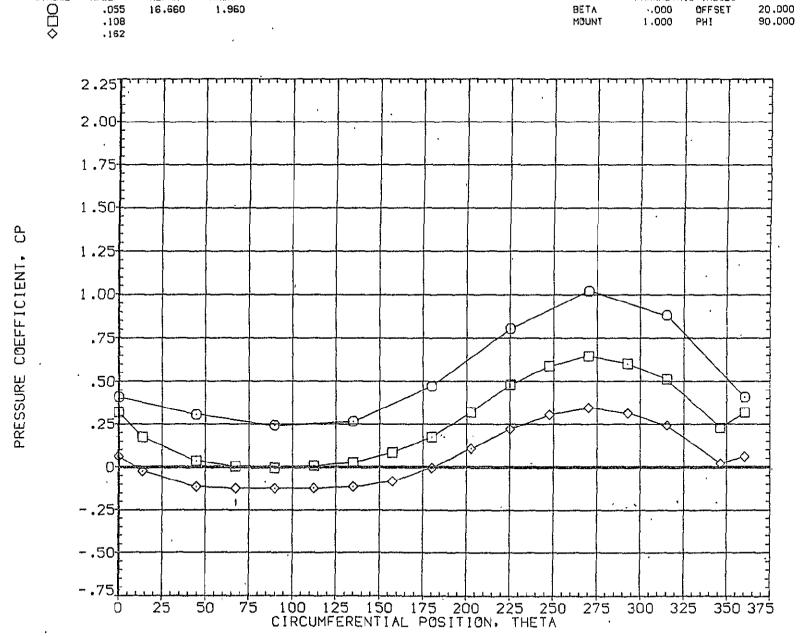
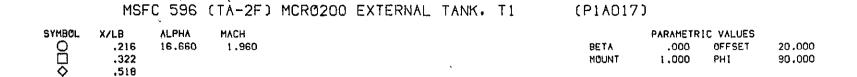


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1265



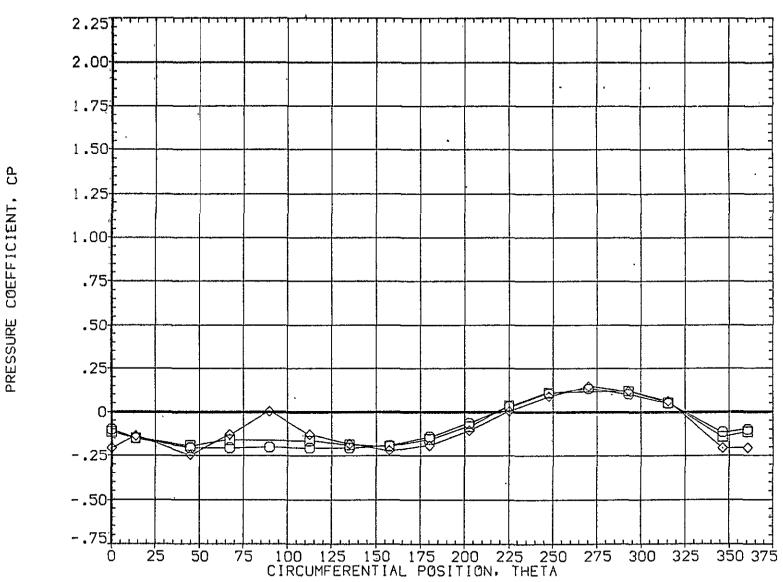


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1266

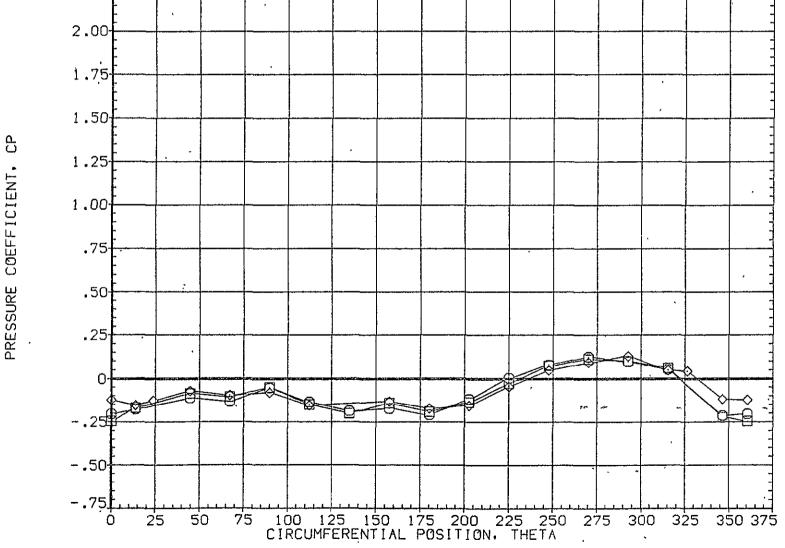


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - I1 WITH PROTUBERANCES

PAGE 1267

 \mathcal{P}

COEFFICIENT,

-.50

-.75£

50

75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1268

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

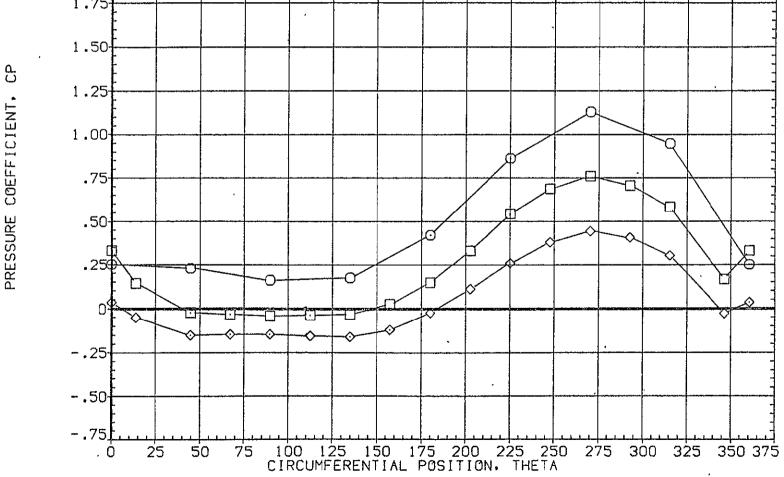


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBÉRANCES
PAGE: 1269



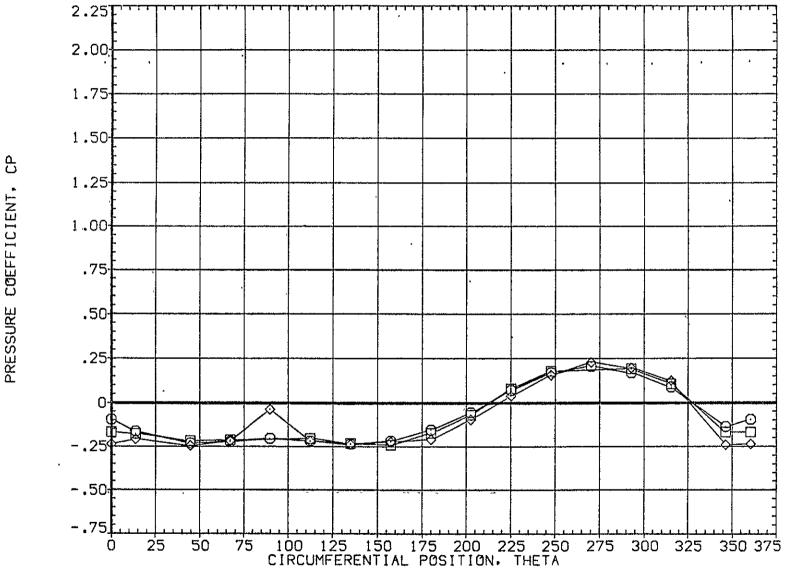


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1270



(P1A018)

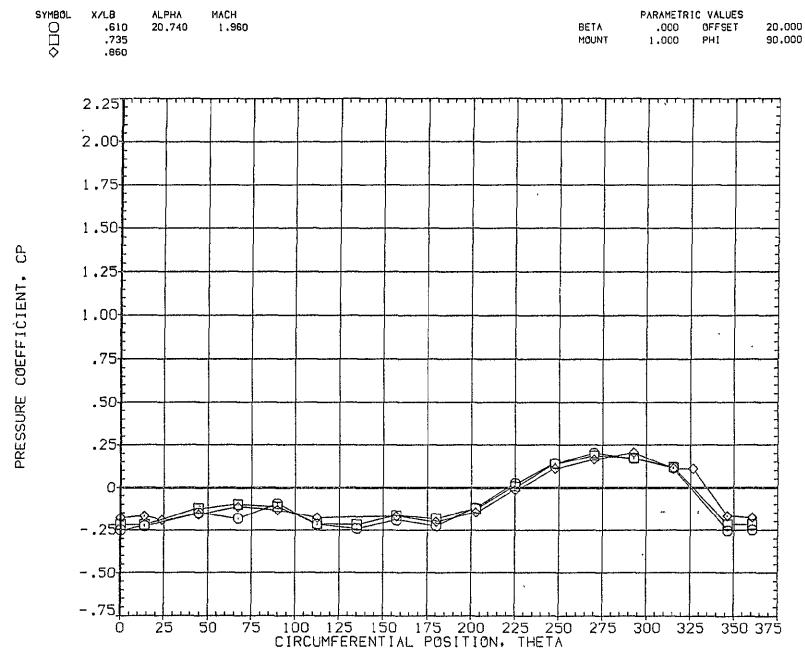
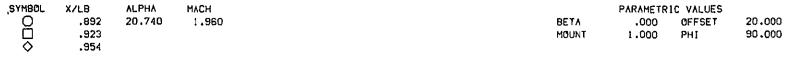


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1271



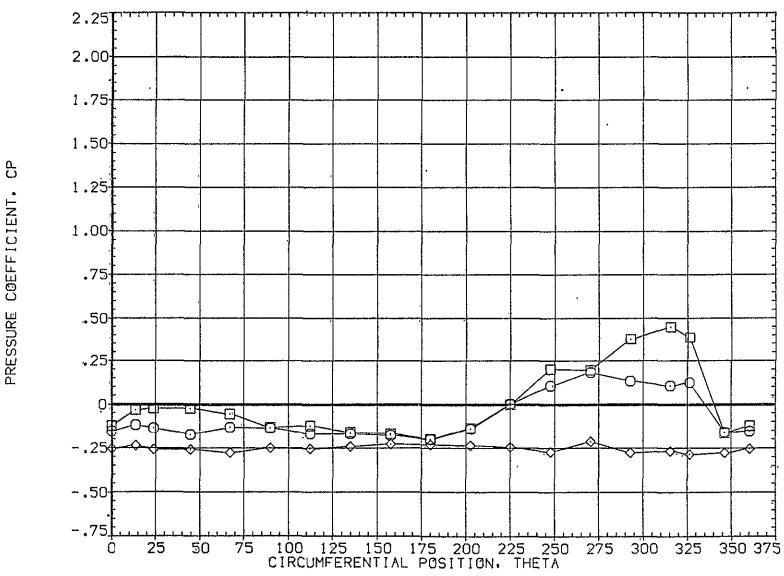


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1272

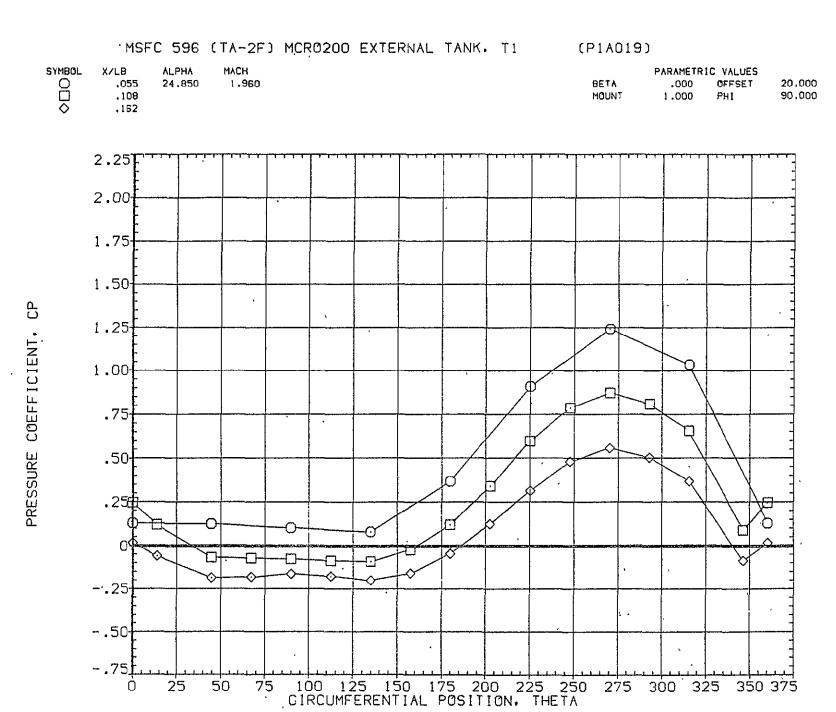


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1274

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.50

-.75

25

50

75

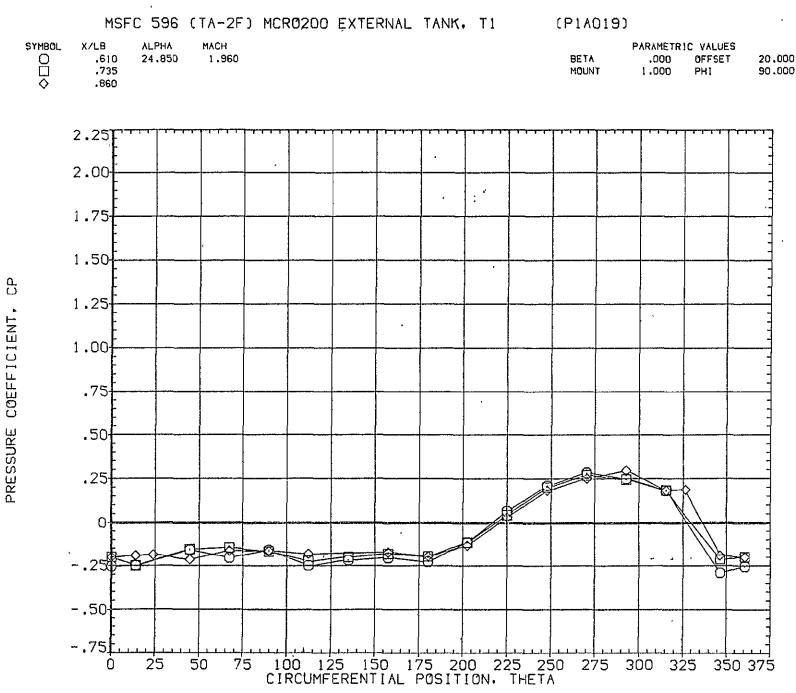


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1275



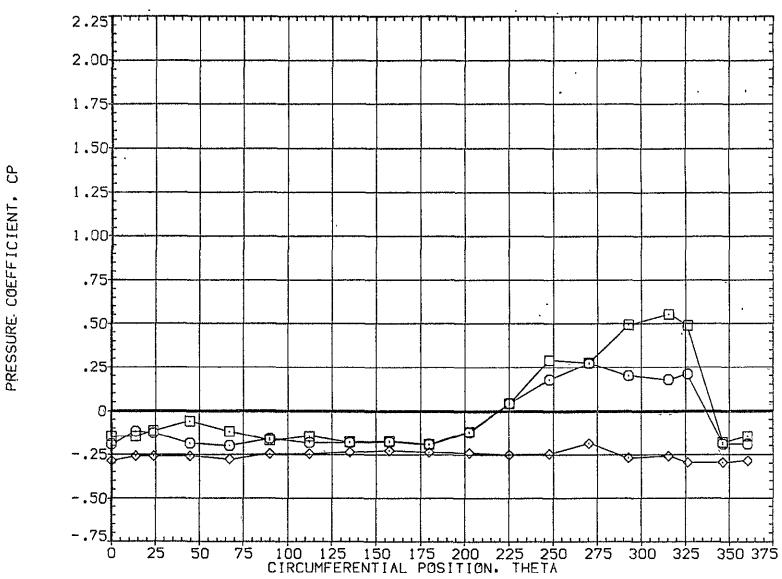


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1276

MOEC	500	ርፒለማሮነ	MCDMOOO	EXTERNAL	T A KIIC	Т 1
1422-1	DAP.	1 N~/r	MURIZIU	PXIPRIVAL	I AIVA	1 1

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Łι	Γ.	l٨	U	4	U	,

SYMBOL O O O	X/LB .055 .106	5 26 8				•							q T	PARAMETRIC VA .000 OFF 1.000 PH		20.000 90.000
	2.25		, , , , , , , , , , , , , , , , , , , 			 	 		, , , , ,	 			 	 		·····
	2.00				,										,	
	1,75	-														
	1.50-	-														
	1.25	-							<u> </u>			0				
COEFFICIENT.	1.00	-								}	3 _		7	7		
)EFF1	.75	- - -				<u> </u>								\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
PRESSURE CO	. 50-	-	-								T C		0	8		
	. 25		ļ						0					,		
	0 [©]				0_				<u>n</u>	8						
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	50	- - -														
	75	• • • •					-4-4-1-1	_4_!_!_	_!_!	1-1-1-1						
	Ó) 2	5 5	50 7	5 II	DO 12 RCUMF	25 15 ERENT	50 17 TIAL F	75 20 POSIT	00 22 ION,	25 25 THETA	50 27 N	75 30	ÒO 32	?5 350	375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

XZLB

.216

ALPHA

28.930

MACH

1.960

BETA

PARAMETRIC VALUES

OFFSET

20.000

.000

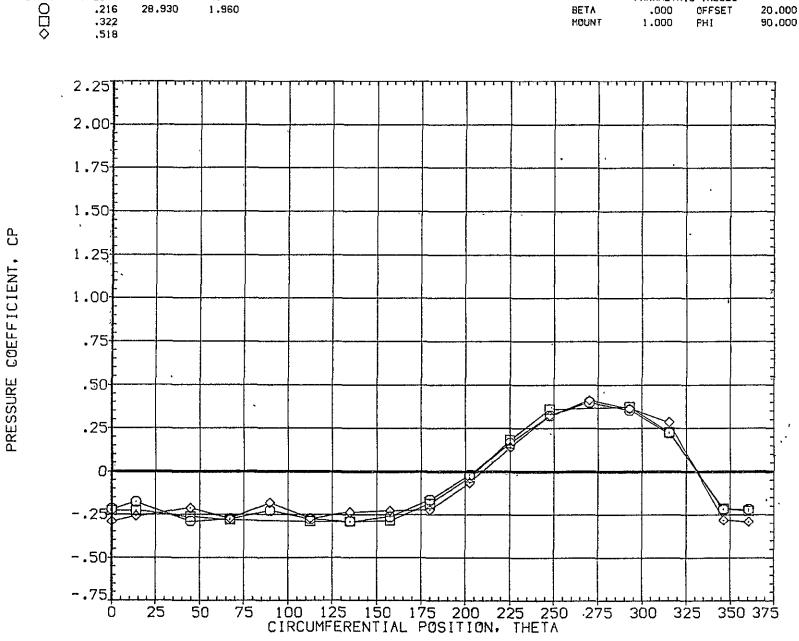


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1278

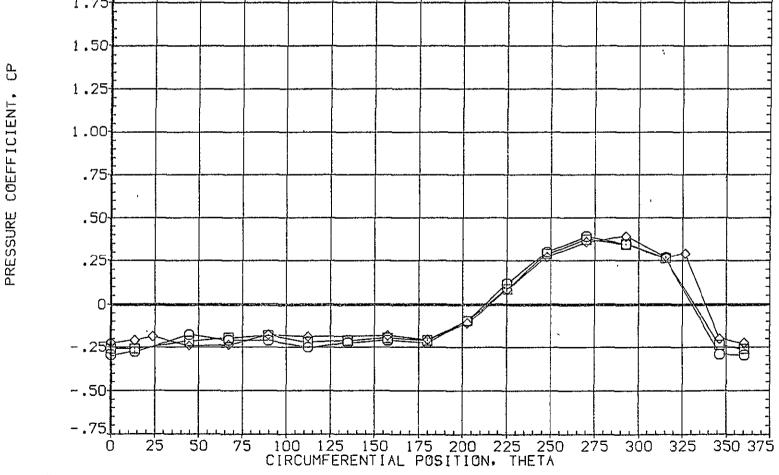


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1279

X/LB

ALPHA

MACH

[P1AU2UJ

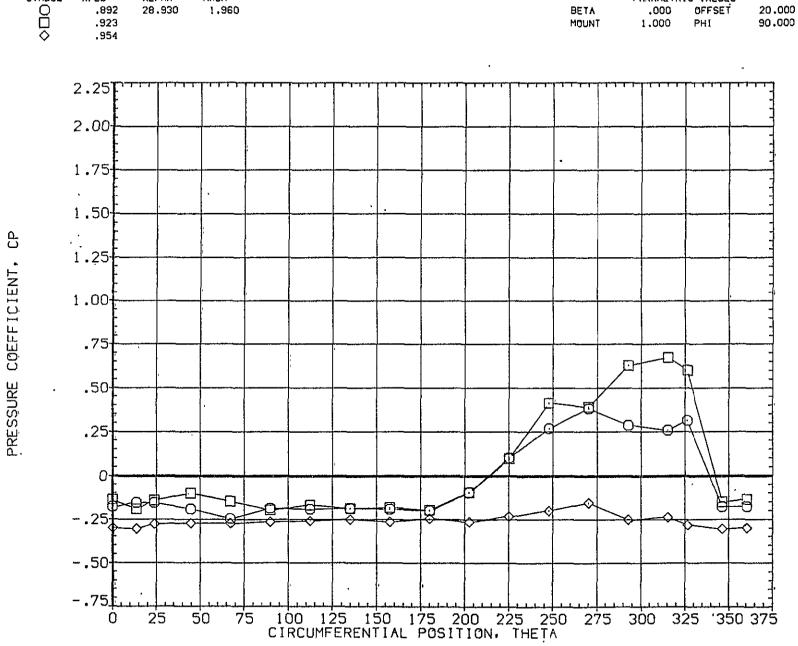


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1280

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A031) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 0□◊ .055 -8:380 1.960 BETA .000 OFFSET .000 .108 MOUNT 1.000 PHI 180,000 .162 2.25 2.00 1.75 1.50 ස 1.25 COEFFICIENT. 1.00 .75 PRESSURE .50 0 .25 -.25 -.50 -.75<u>l</u> 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1281



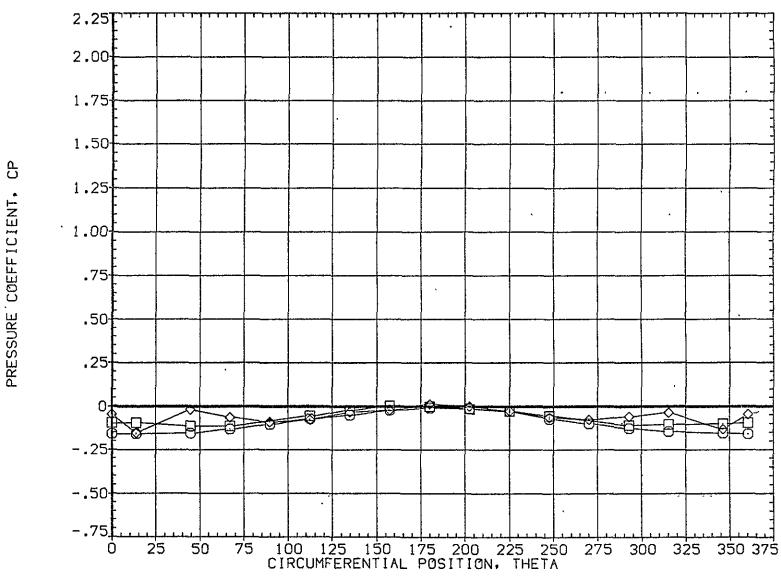


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1282

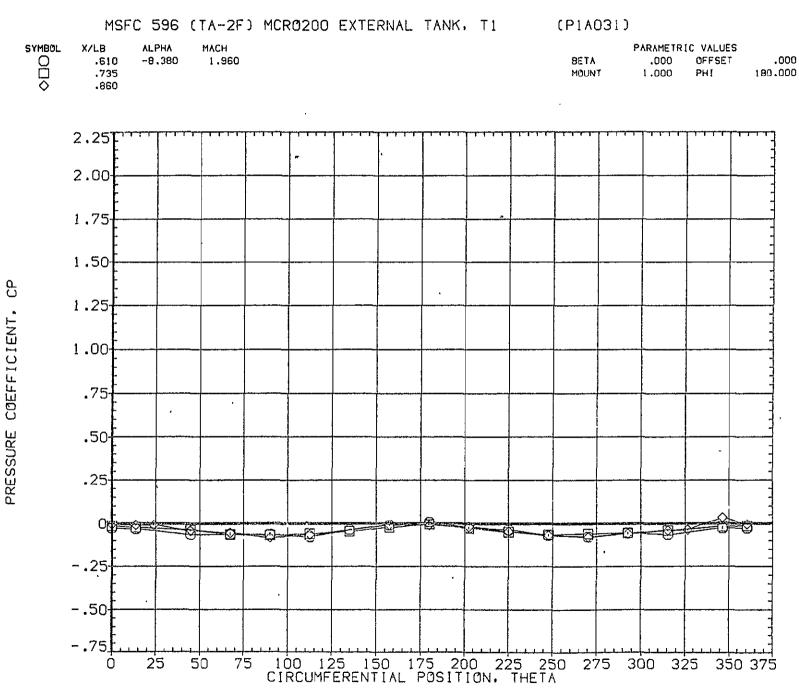


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1283

X/LB

ALPHA

MACH

(PIAU31)

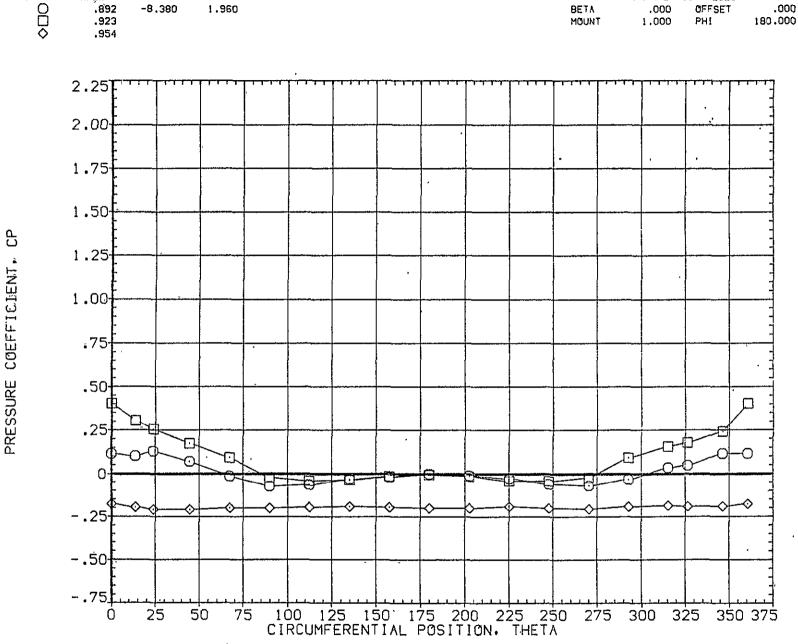


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1284

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

50

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

275 300 325 350 375

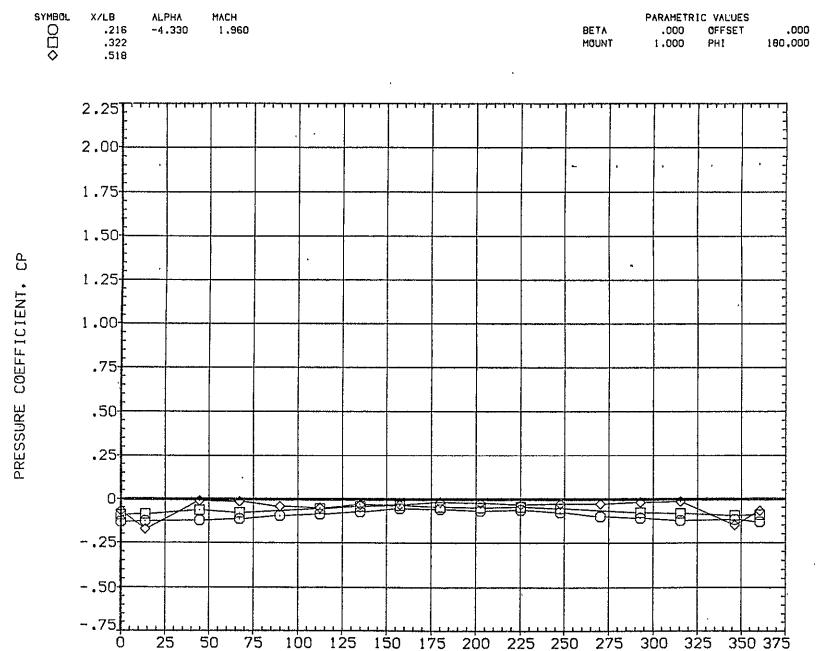


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1286

CIRCUMFERENTIAL POSITION, THETA

.000

190,000

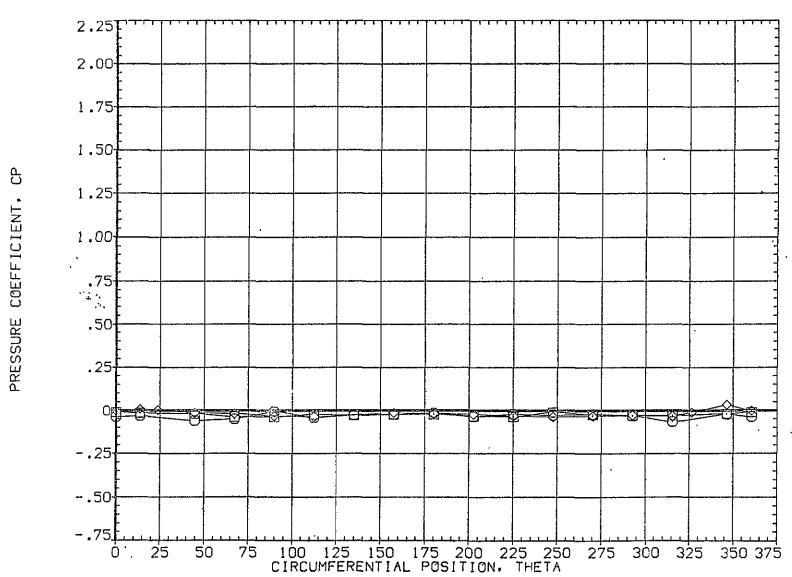


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1287



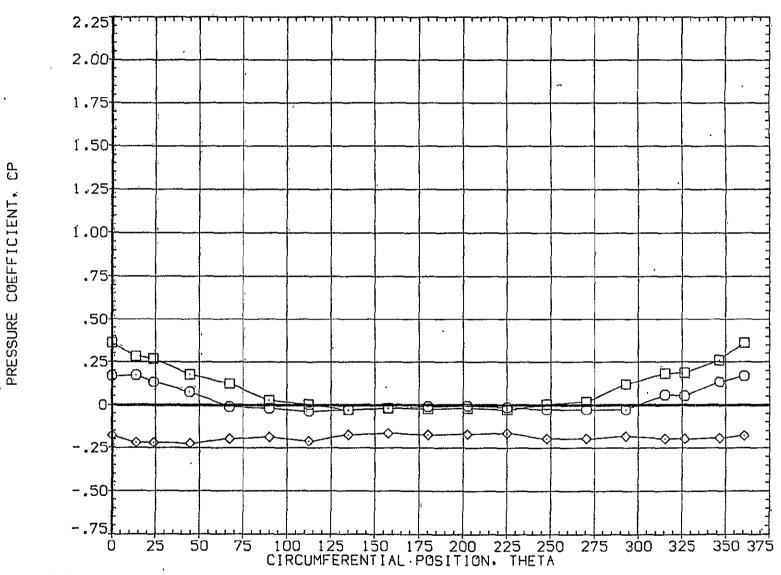


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1288

(P1A033) MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 SYMBOL X/LB ALPHA MACH PARAMETRIC VALUES 000 OFFSET .000 .055 -.280 1.960 BETA .000 MOUNT 1.000 PHI 180,000 .108 ,162 2.25 2.00 1.75 1.50 1.25 COEFFICIENT, 1.00-.75 PRESSURE .509 -.50 100 125 150 175 200 225 250 275 300 325 350 375 25 50 Ò CIRCUMFERENTIAL POSITION. THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1289

(P1A033)

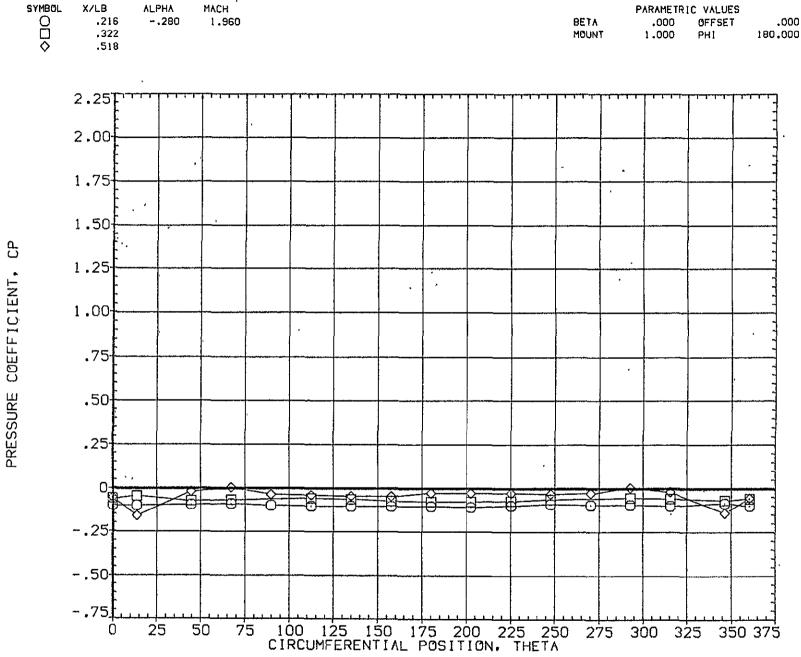


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1290

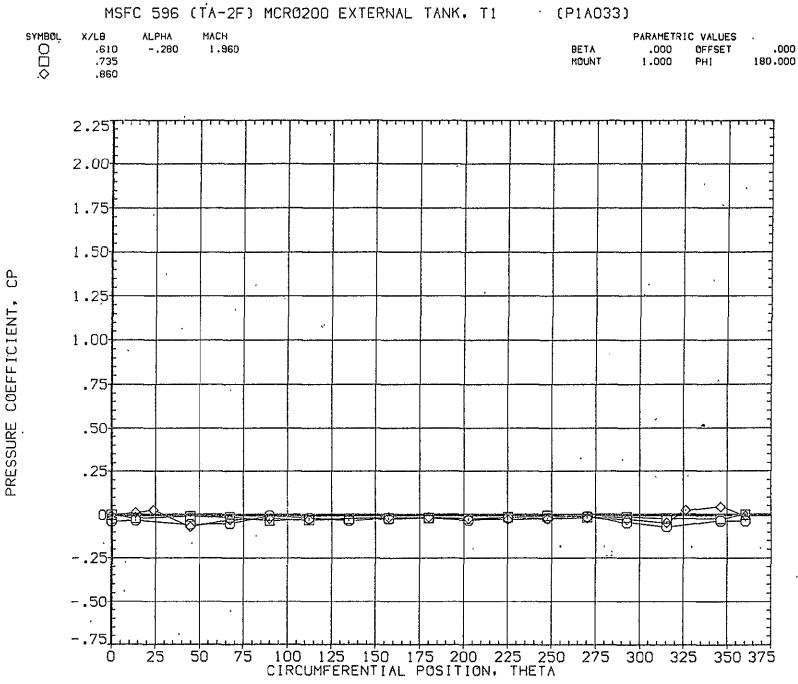
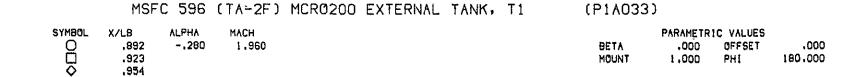


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1291



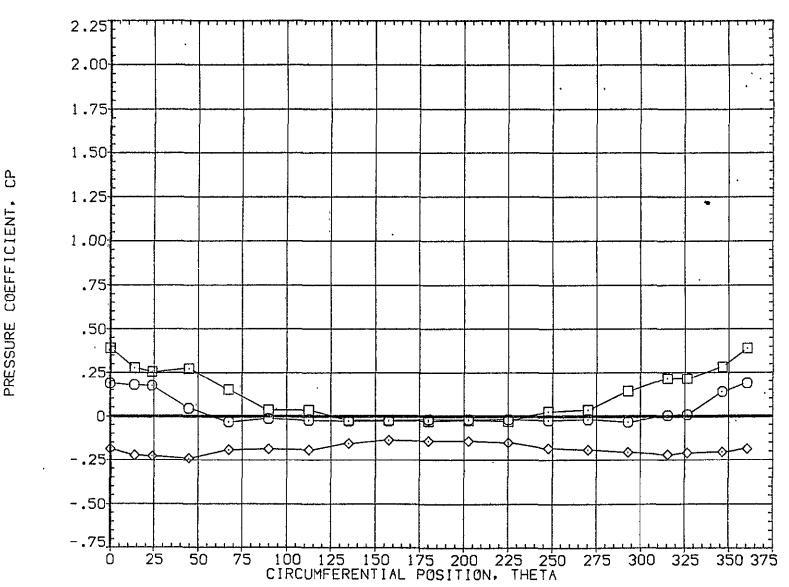


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1292

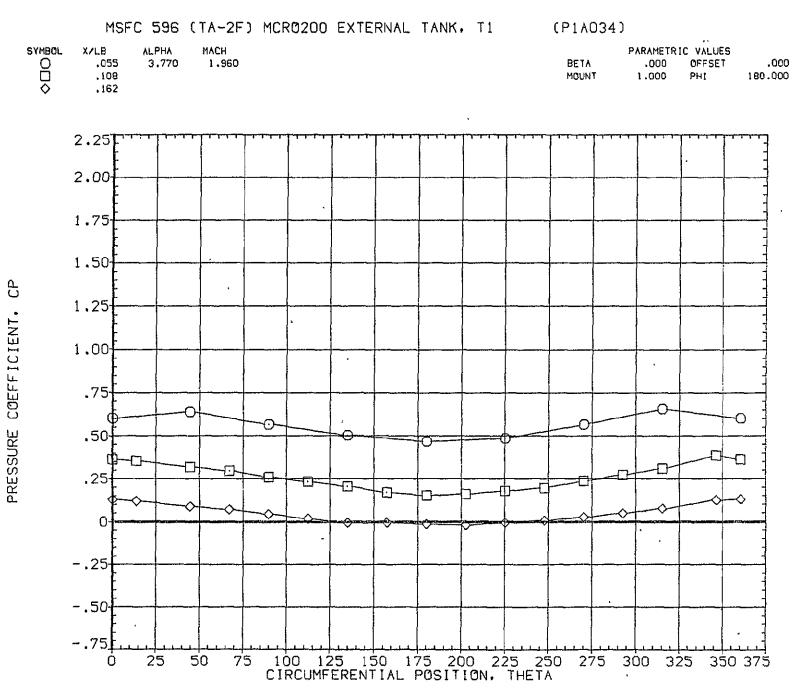


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1293

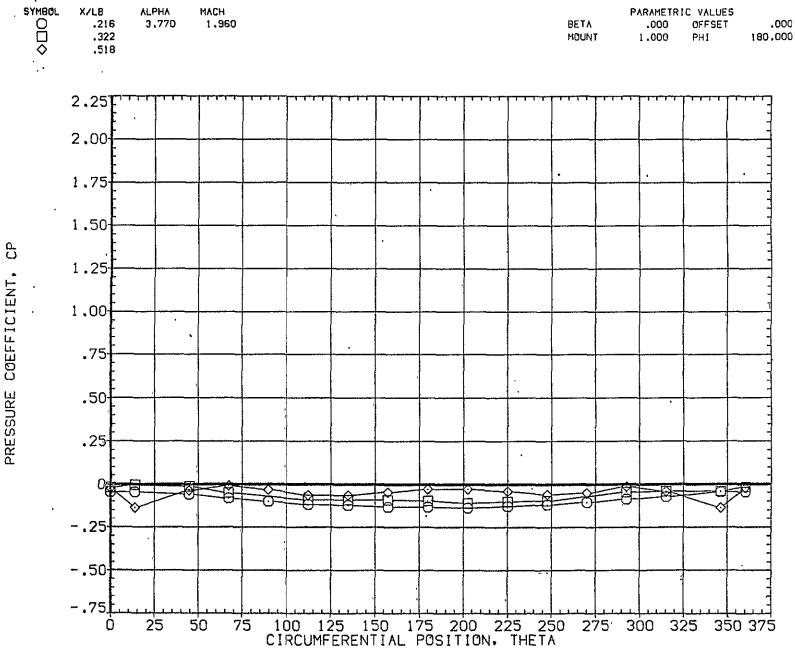


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1294

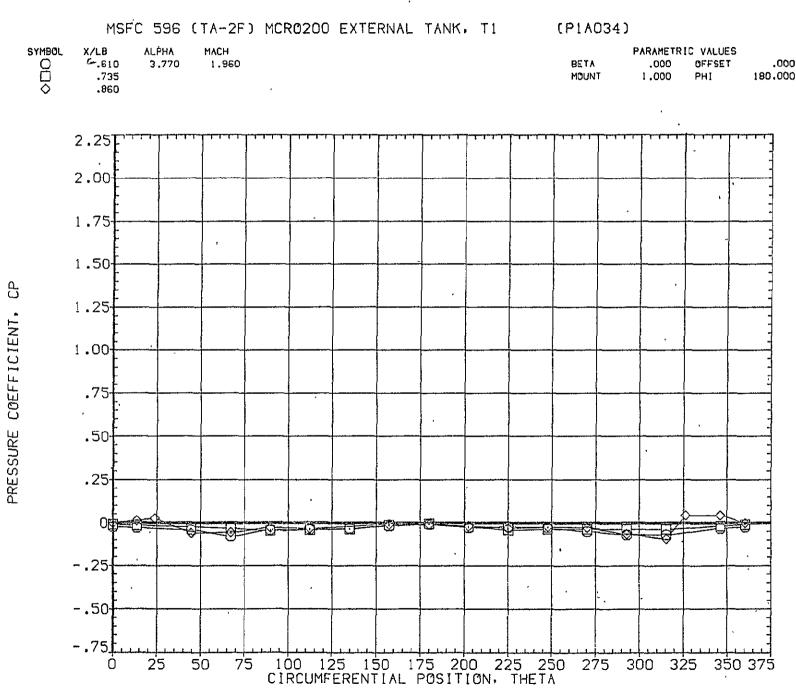


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1295

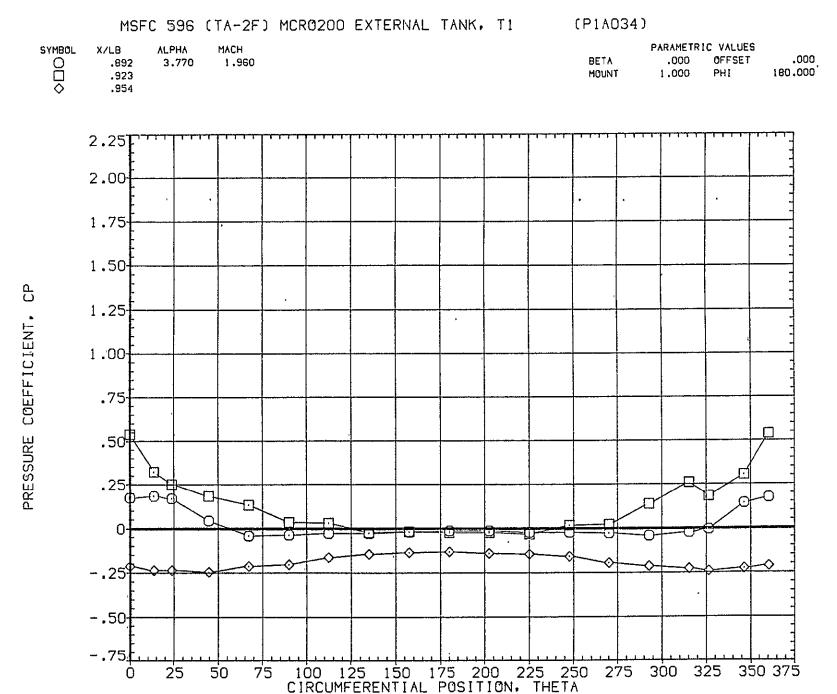


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1296

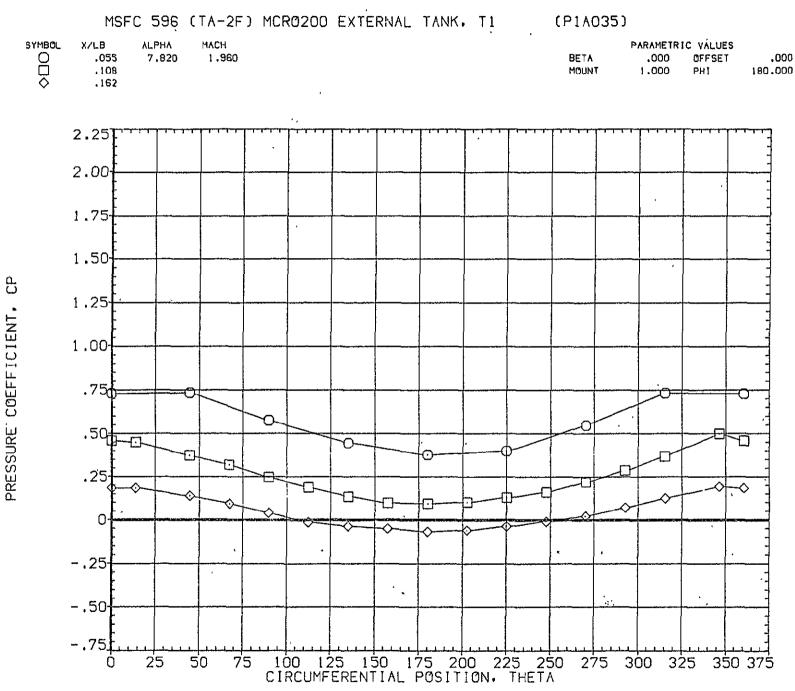


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1297

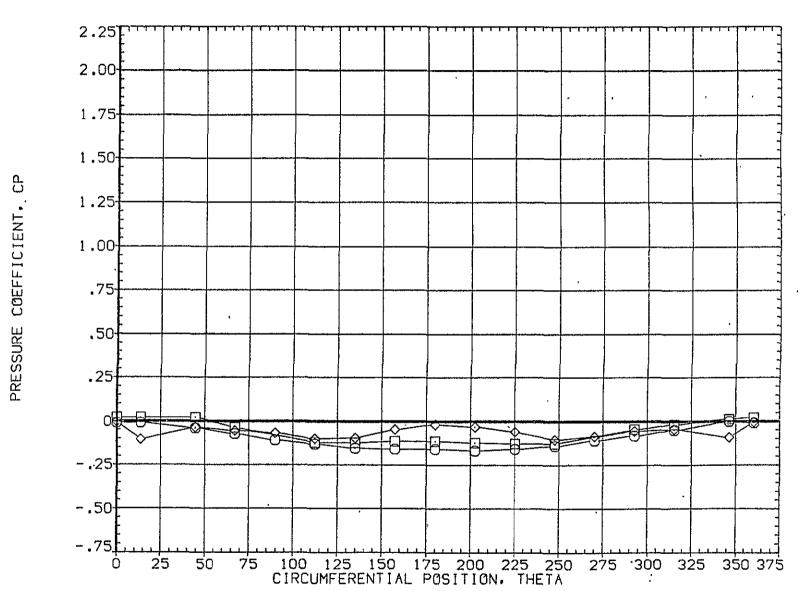


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1298

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A035) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 1.960 .610 7.820 BETA OFFSET .000 .735 MOUNT 1.000 PHI 180,000 .860 2.25 2.00 1.75 1.50 g. 1.25 COEFFICIENT, 1.00-.75 PRESSURE .50 .25

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1299

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.25

-.50

-.75

X/LB

ALPHA

MACH

PARAMETRIC VALUES

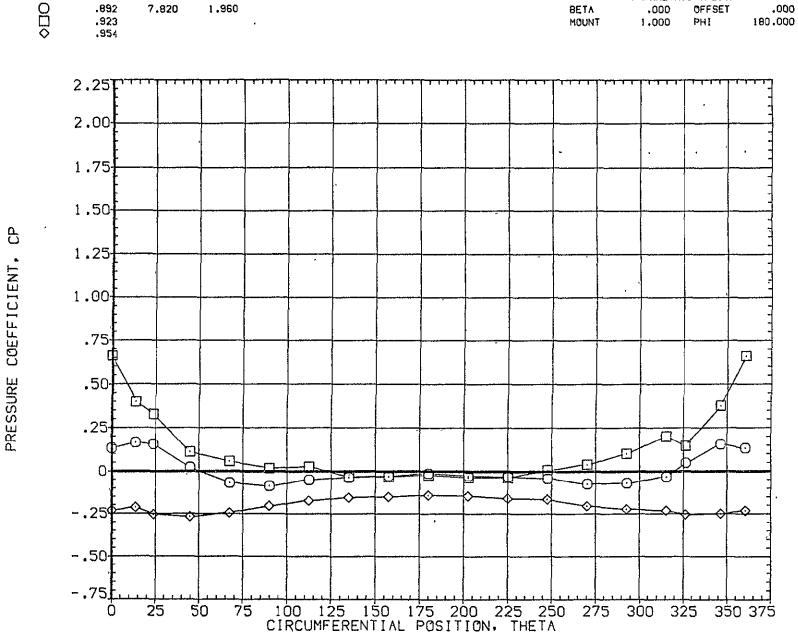


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1300

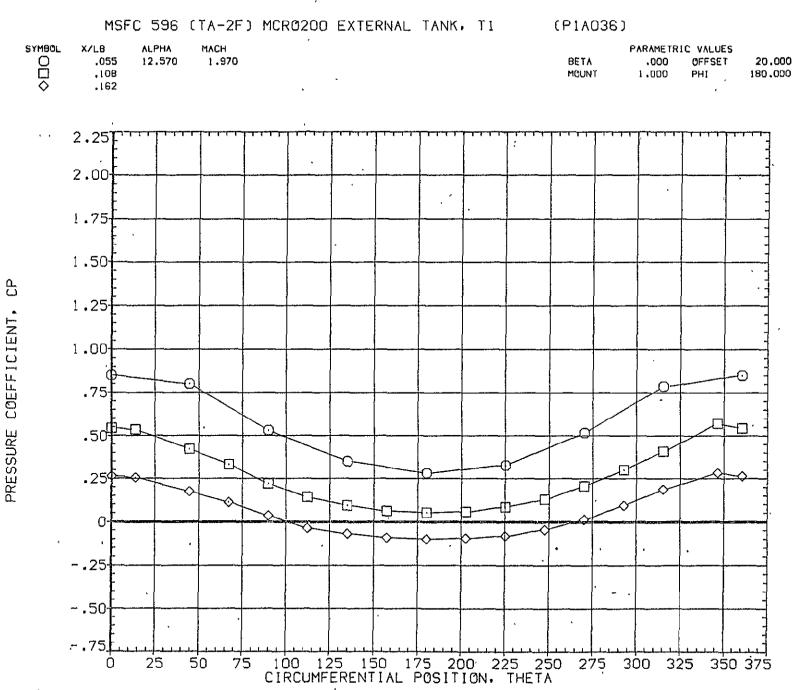


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1301

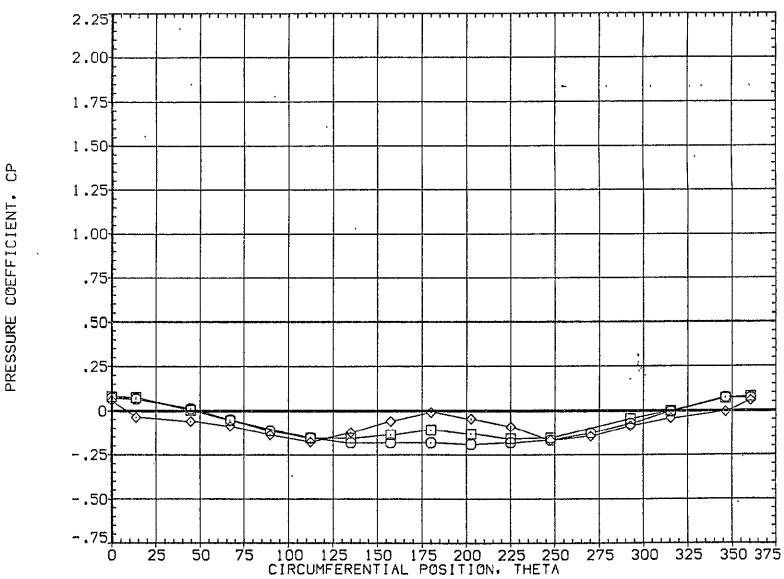


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1302

MSFC 596 (TA-2F) MCRO2DO EXTERNAL TANK, T1

(P1A036)

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 12.570 1.970 .610 OFFSET 20.000 BETA .000 .735 MOUNT 1.000 PHI 180.000 .860

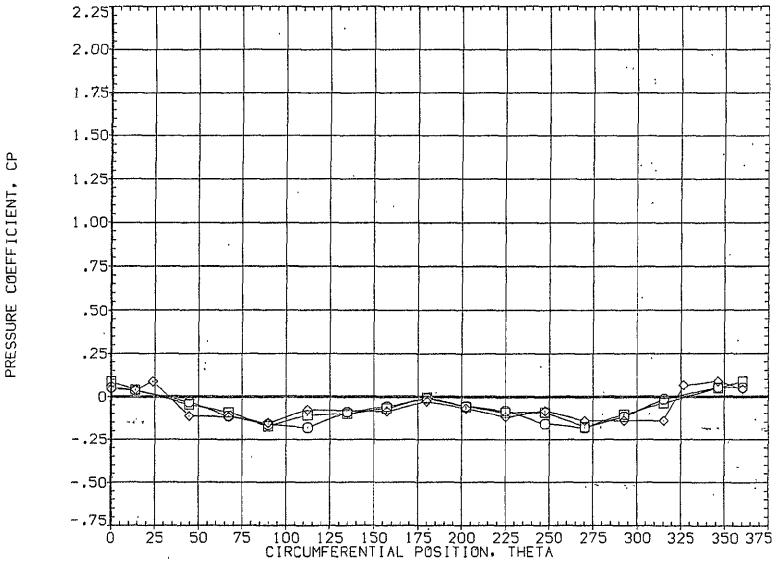


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

X/LB

ALPHA

MACH

PARAMETRIC VALUES

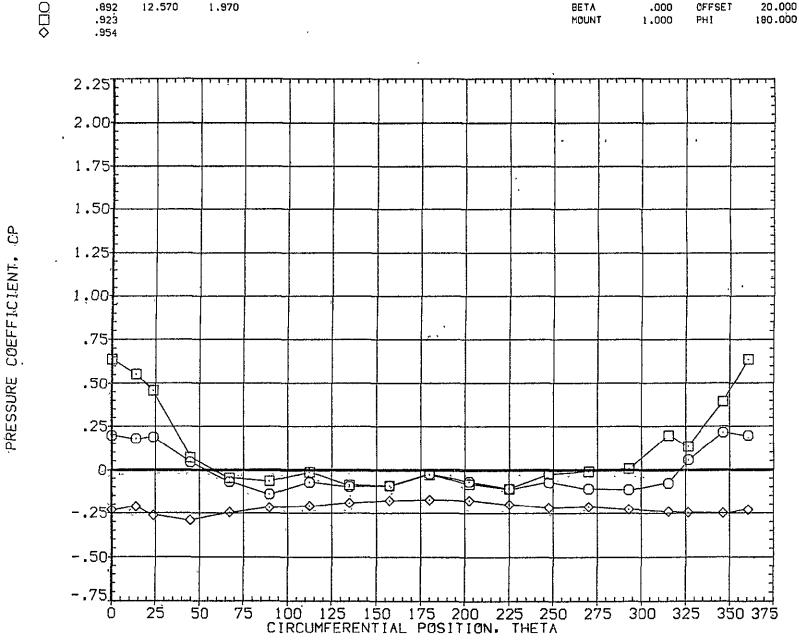


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1304

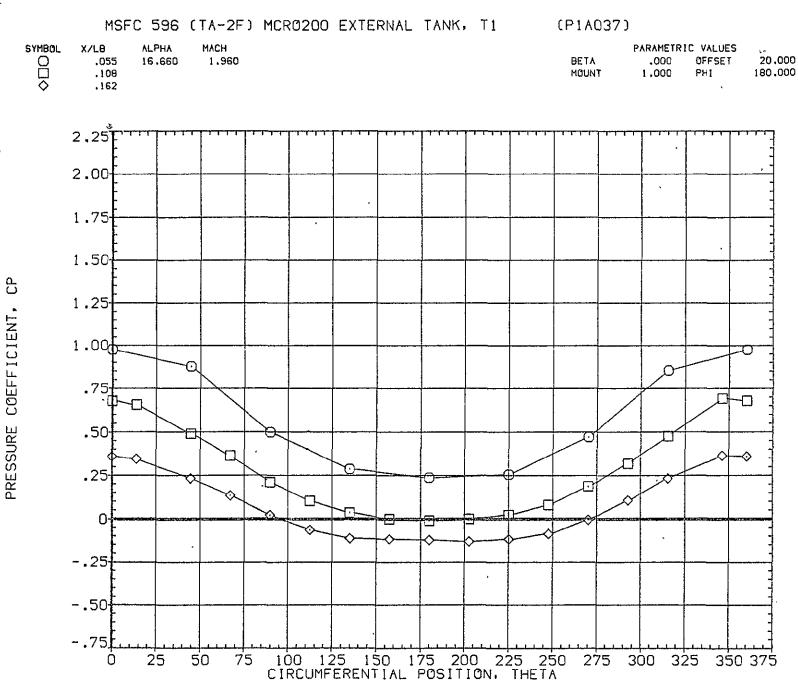
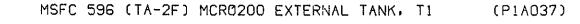


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





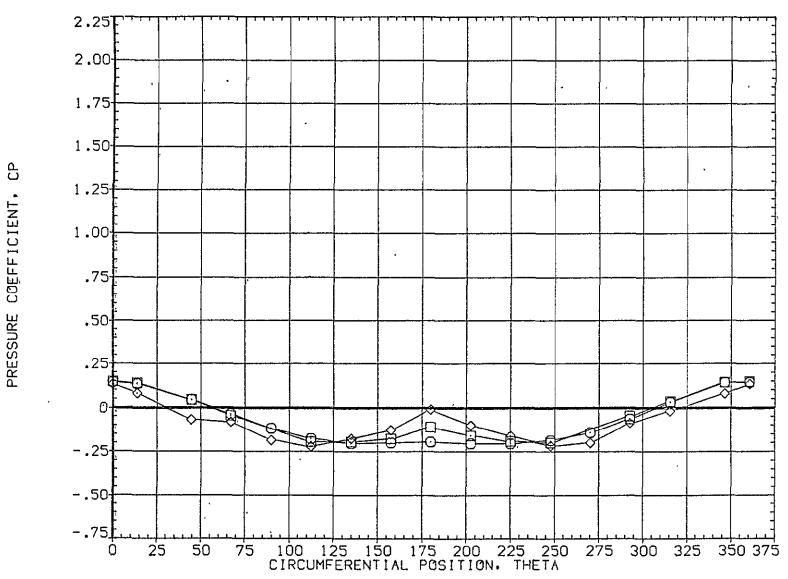


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1306

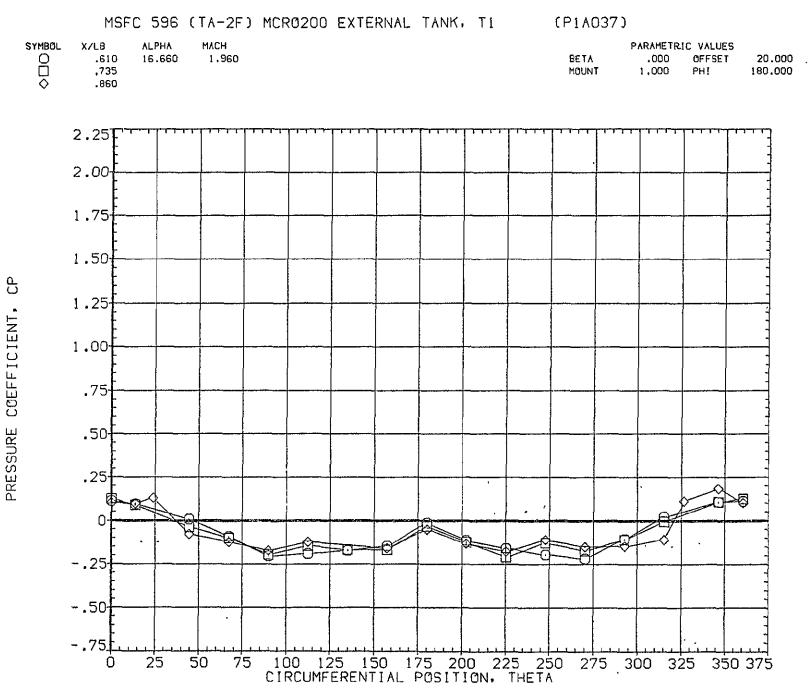


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1307



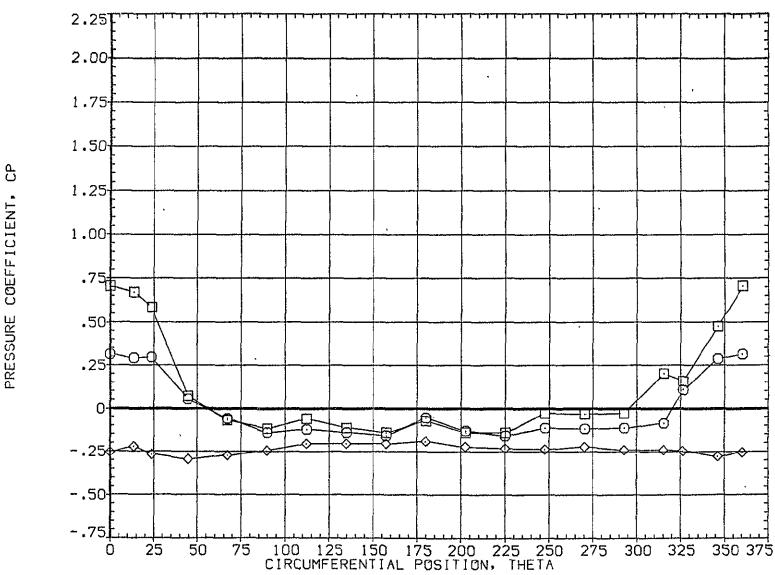
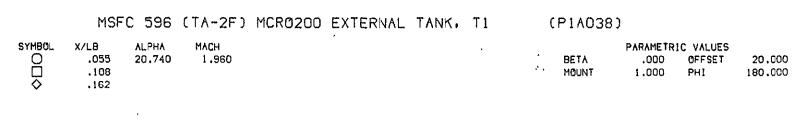


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1308



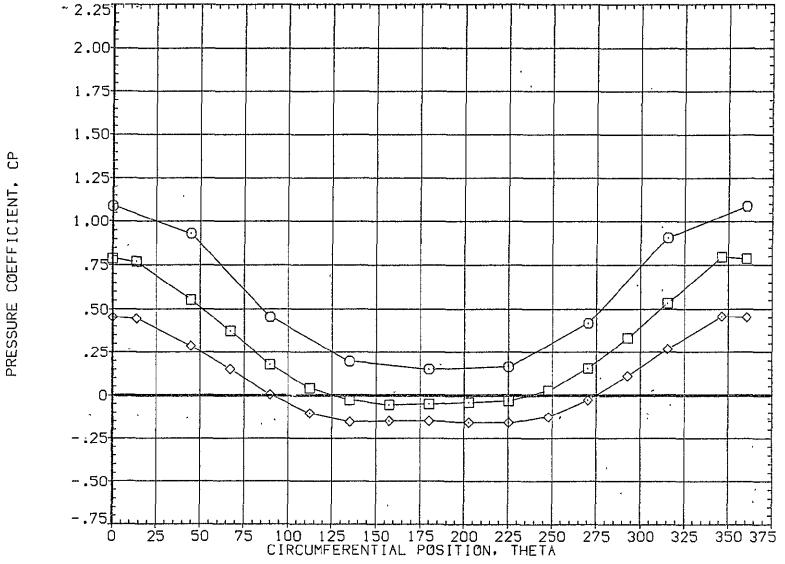


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

(P1A038)



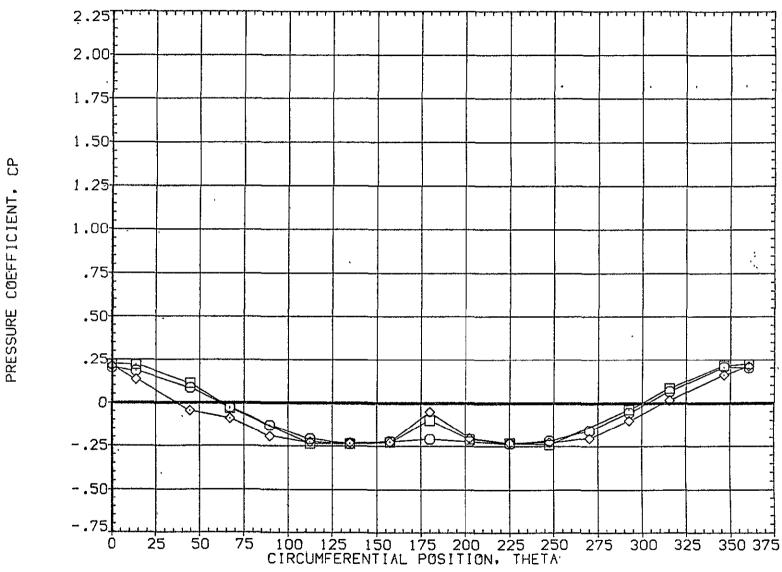


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1310

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A038) SYMBOL **ALPHA** , X\rB MACH PARAMETRIC VALUES 000 .610 20.740 1.960 BETA .000 OFFSET 20.000 1.000 PHI 180.000 .735 MOUNT .860 2.25] 2.00 1.75 1.50 S 1.25 COEFFICIENT, 1.00 .75 PRESŞURE .50 -.50 100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA 275 300 325

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1311

X/LB

.892

ALPHA

20.740

MACH

1.960

BETA

PARAMETRIC VALUES

OFFSET

.000

20.000

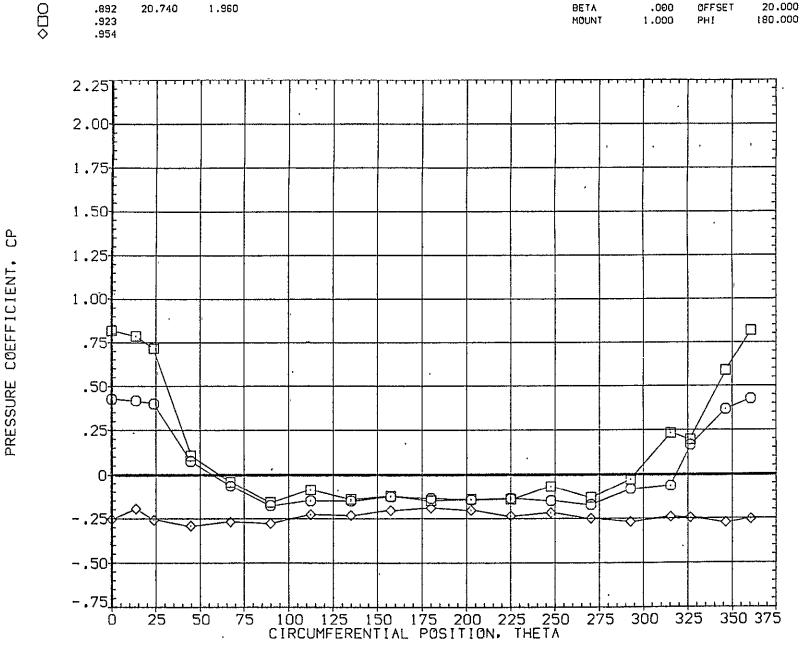


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1312

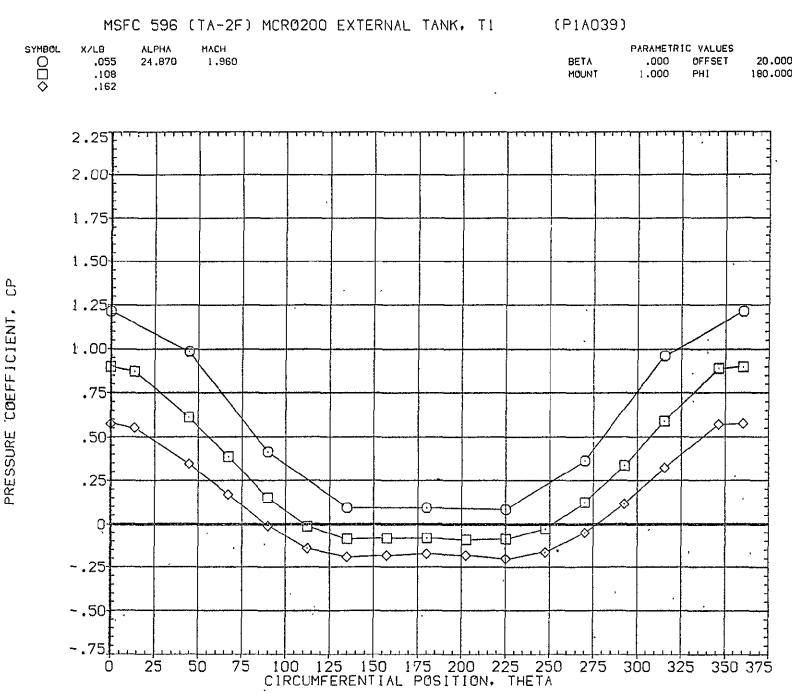


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1313

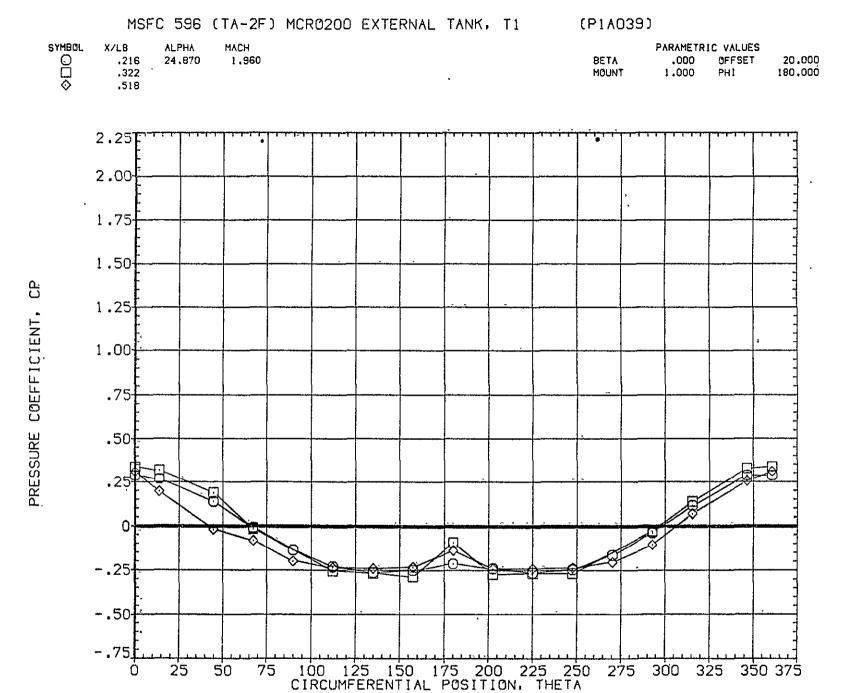


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1314

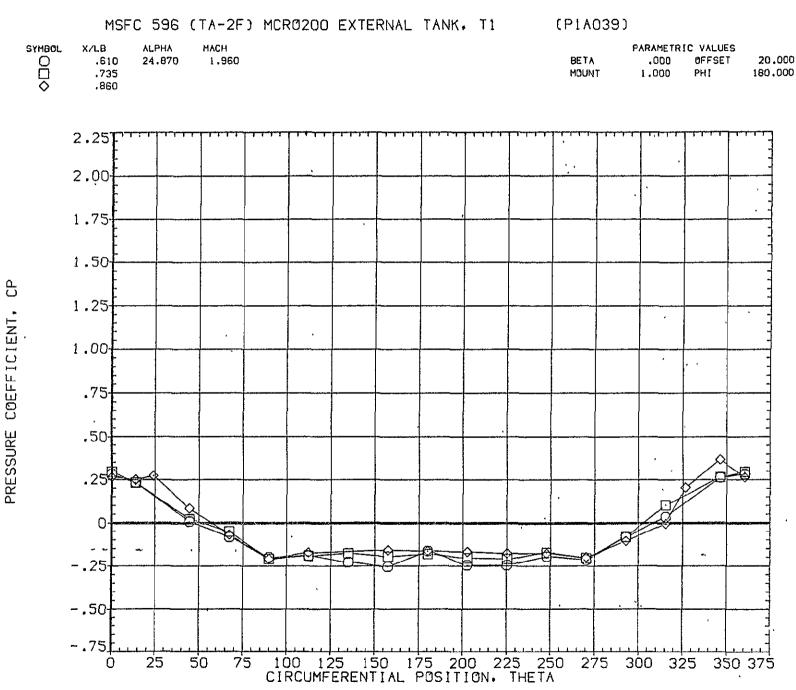
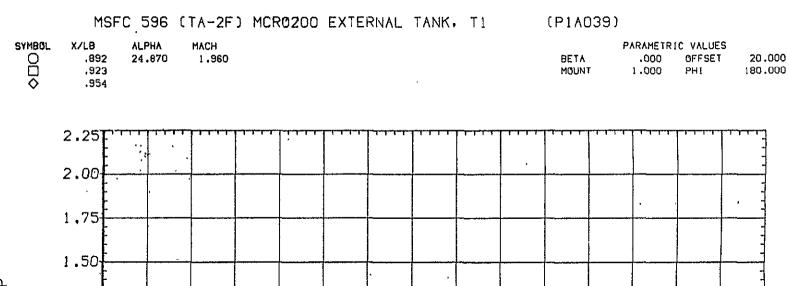


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



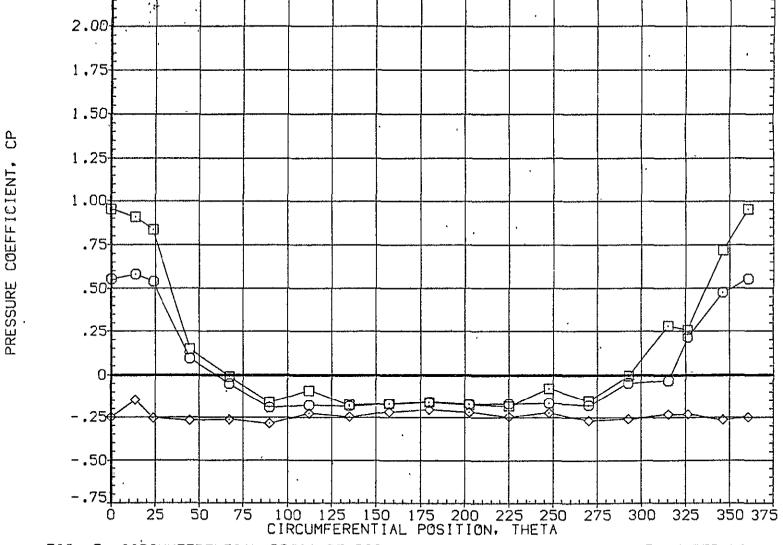


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1316



ALPHA

X/LB -

MACH

(P1A040)

PARAMETRIC VALUES

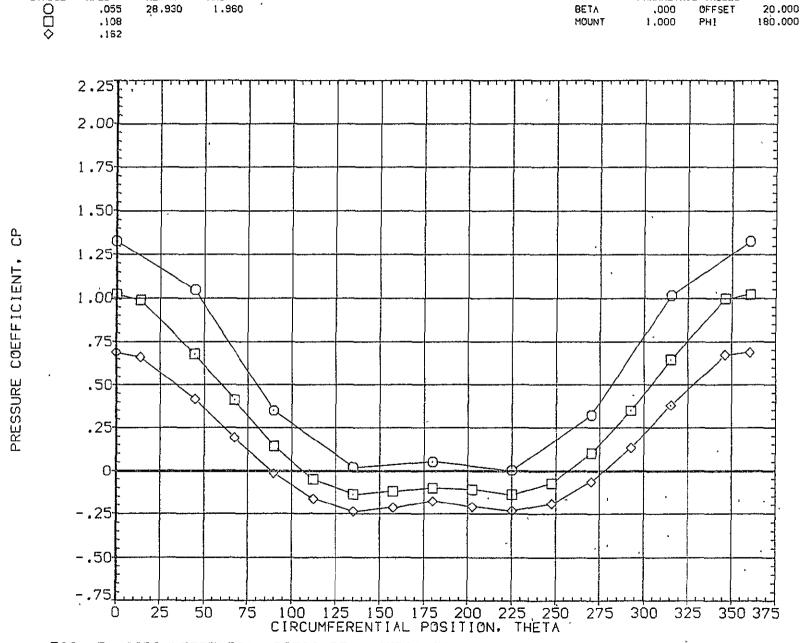


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION. OVER ET - TI WITH PROTUBERANCES



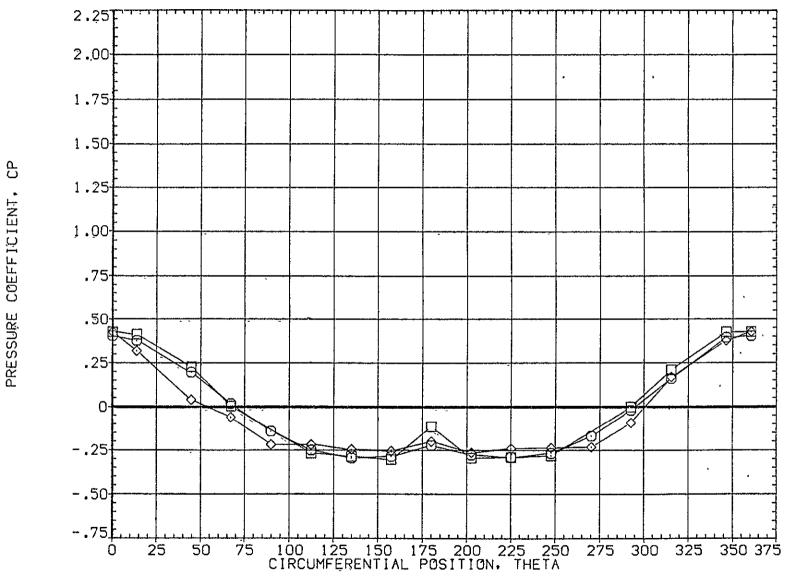


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1318

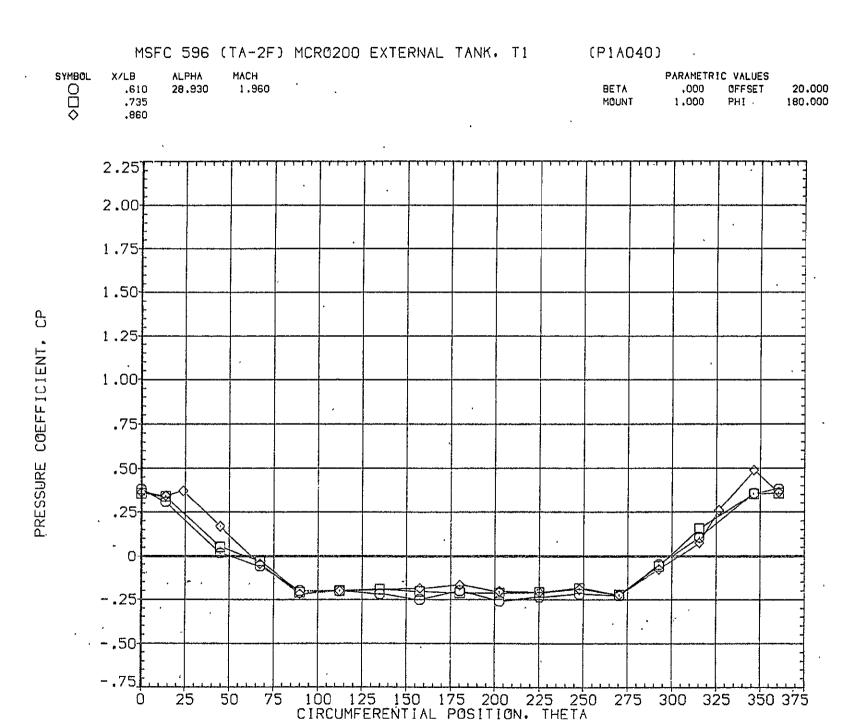


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

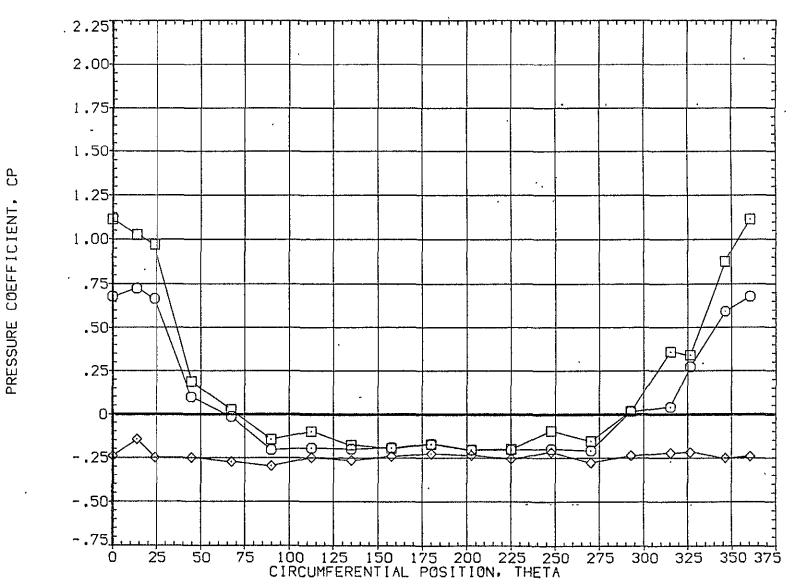


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1320

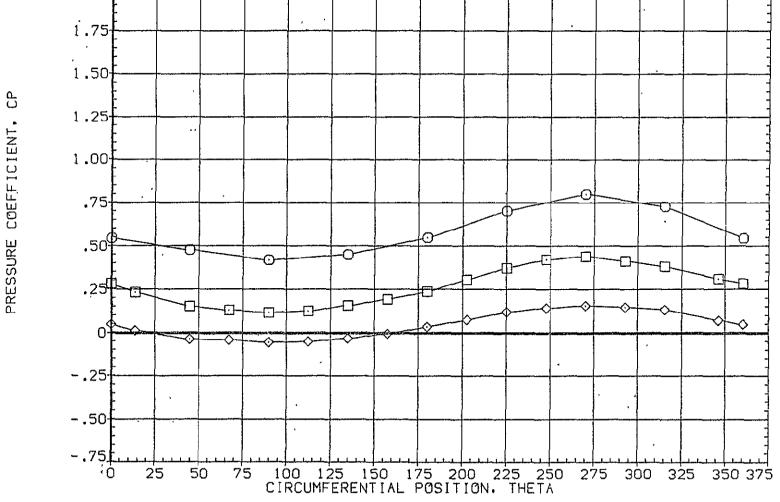
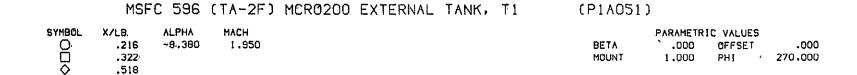


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1321



.518

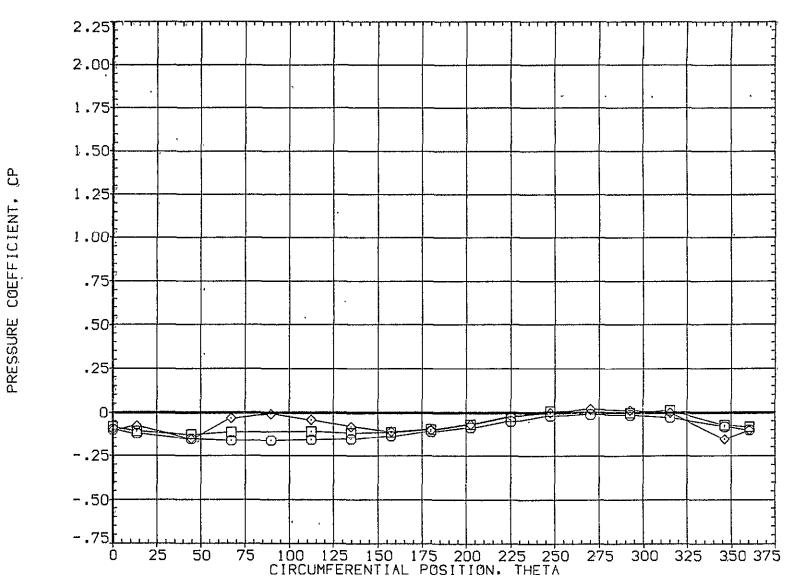


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1322

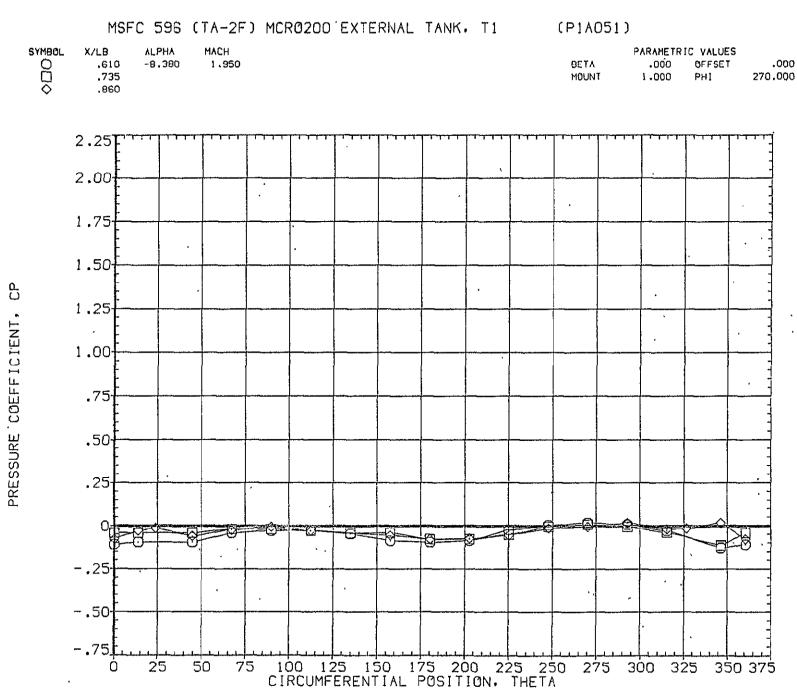
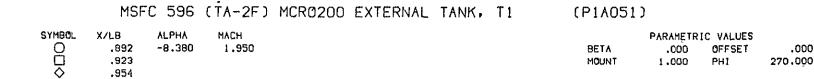


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1323



270,000

MOUNT

1.000

PHI

,923

.954

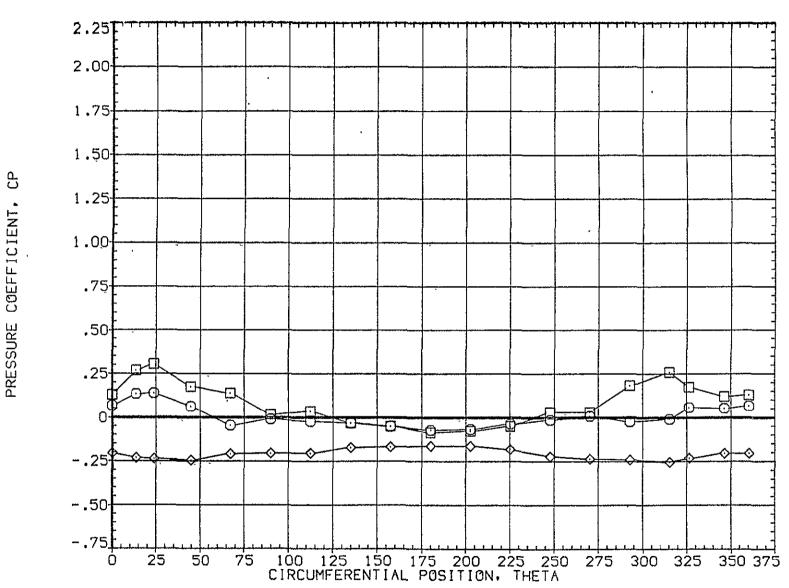


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1324

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1325

SYMBOL

X/LB

ALPHA

MACH

(PIMUDZ)

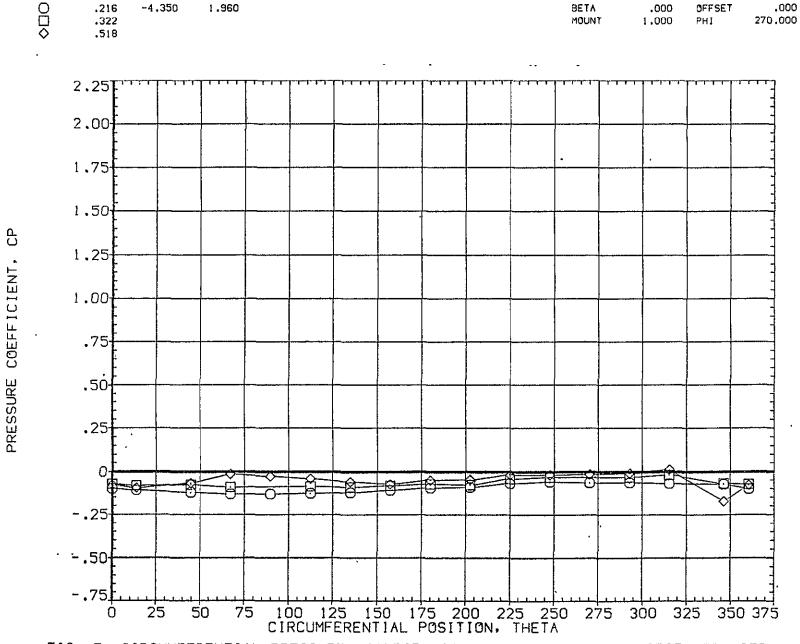


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1326



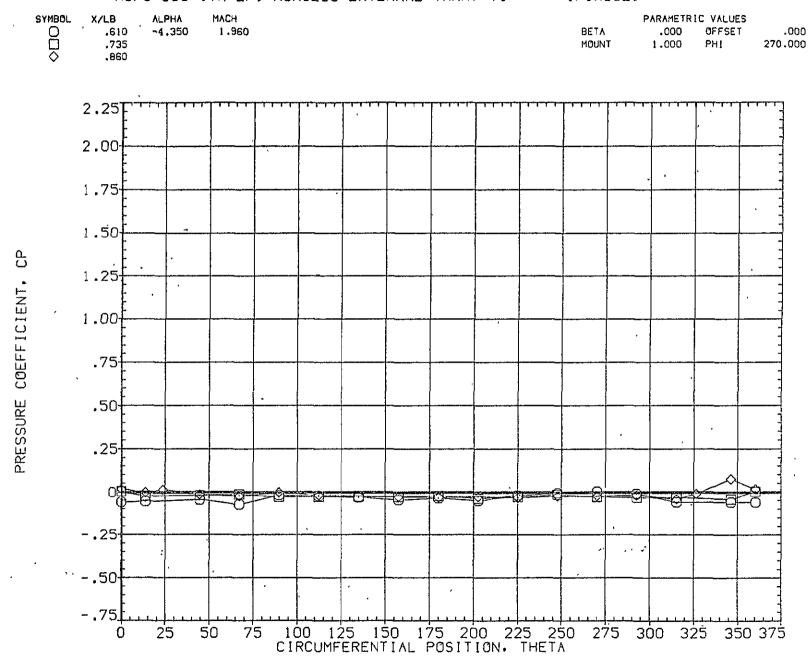


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1327

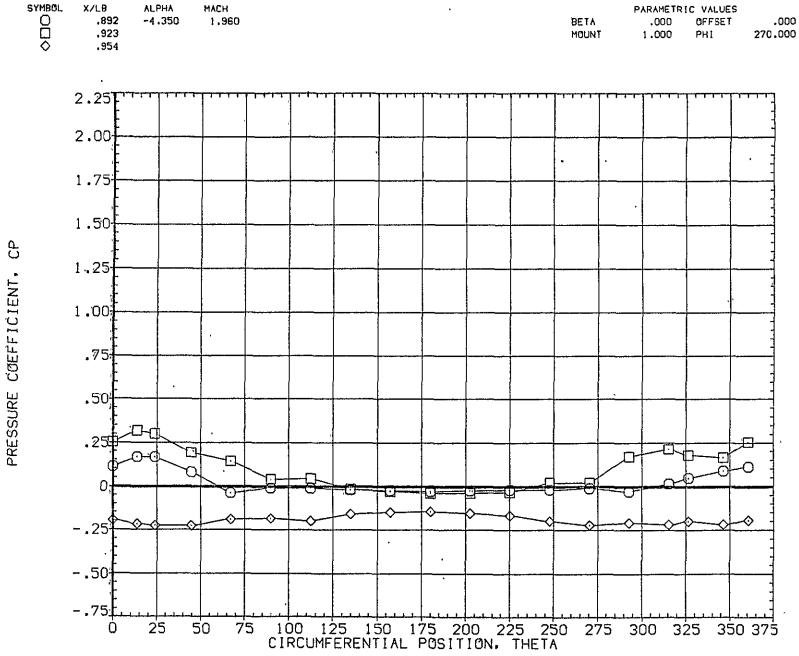


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1328

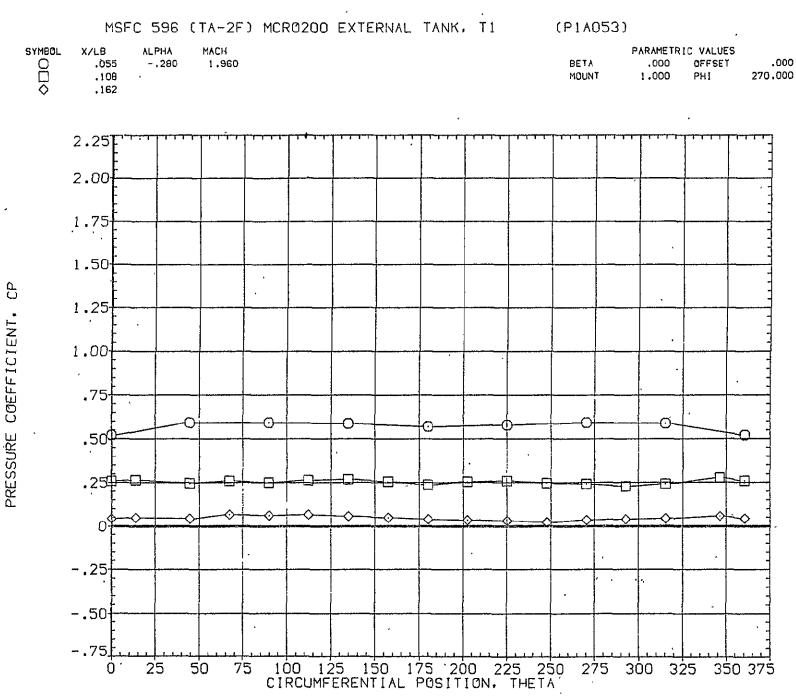


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1329

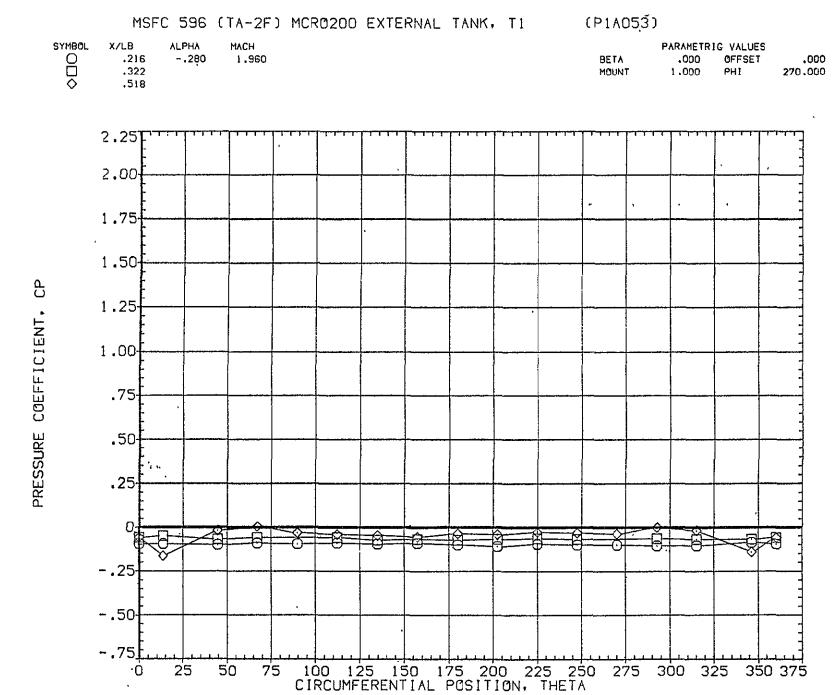
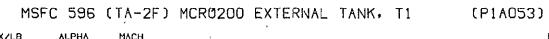


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1330



SYMBOL	X/LB		PHA	MACH									P	PARAMETRIC VALUES		s
0□◊	.610 .735 .860	5	.280	1.960								BETA MOUN	T	.000 1.000	OFFSET PHI	.00 270.00
V	,000	,														
	2.25		 	 	 	,,,,,	, , , , , , ,		, , , , ,		 	 	1	 	 	<u></u>
	2.00															
										ļ .						† -
	1.75							 					<u>'</u>			
	1.50	-			7,											
	1.25	•					·									
	7123	-		. .												<u>-</u>
	1.00	- -								<u> </u>						
,	.75	-														·
	. 50-	•														=
	.30	- -	,	<u>;</u> !												- - -
	.25	- -														
	o d						 -0==	0	0			 0				
	·25		<u> </u>										-			
	.23											, 1				1
	50															
	75	: 	_1_1_1				<u> </u>									1111
	Ó	2	ם כ	0 7	5 10 CII	טט 12 RCUMF	25 13 ERENT	DU 17 FIAL 1	/5 20 POSIT	JU 22 ION:	25 25 THE TA	50 27 \	/5 (3)	90 3	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES - PAGE 1331

SYMBOL

X/LB

ALPHA

MACH

(P1A053)

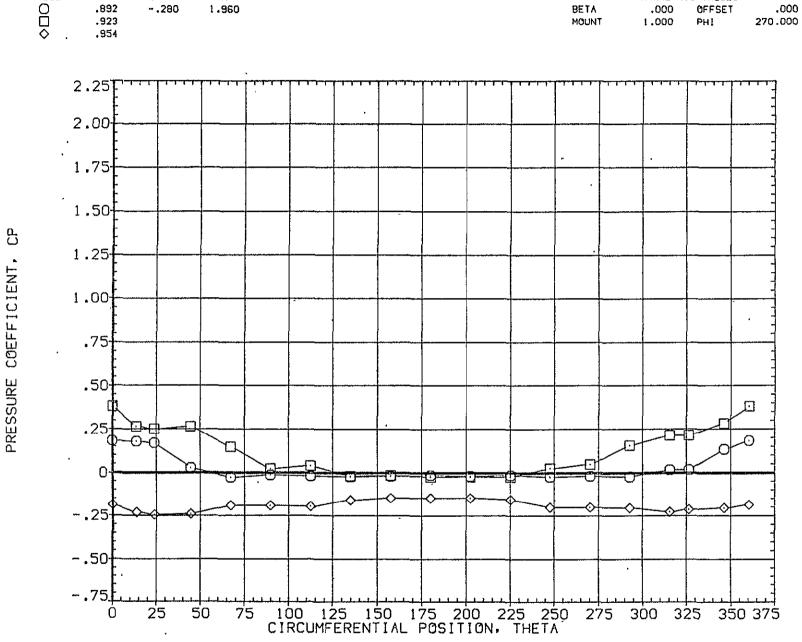


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1332

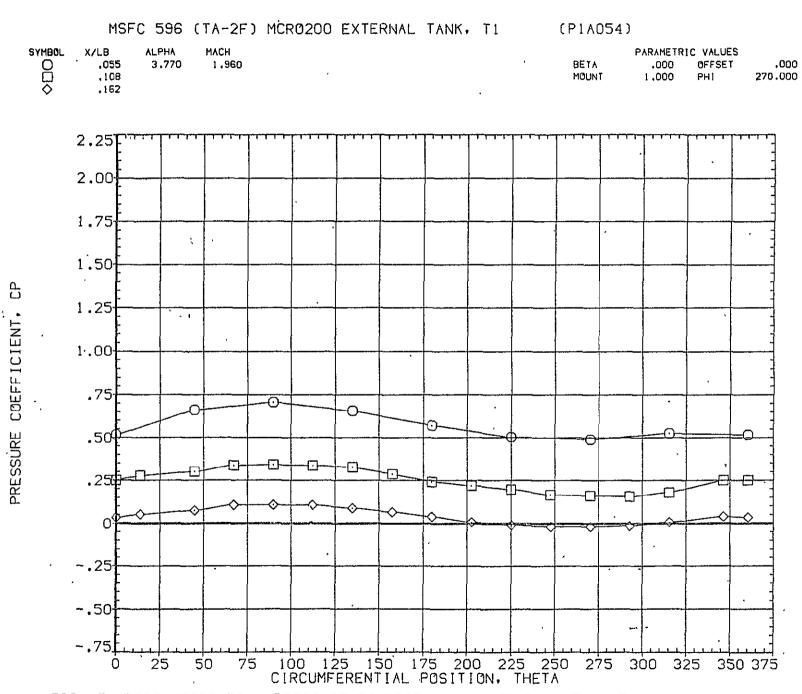


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1333

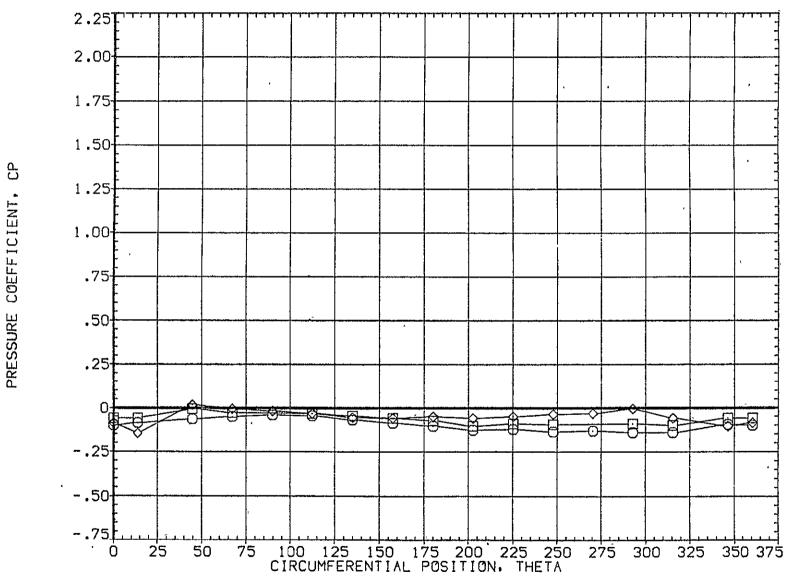


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1334

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1335

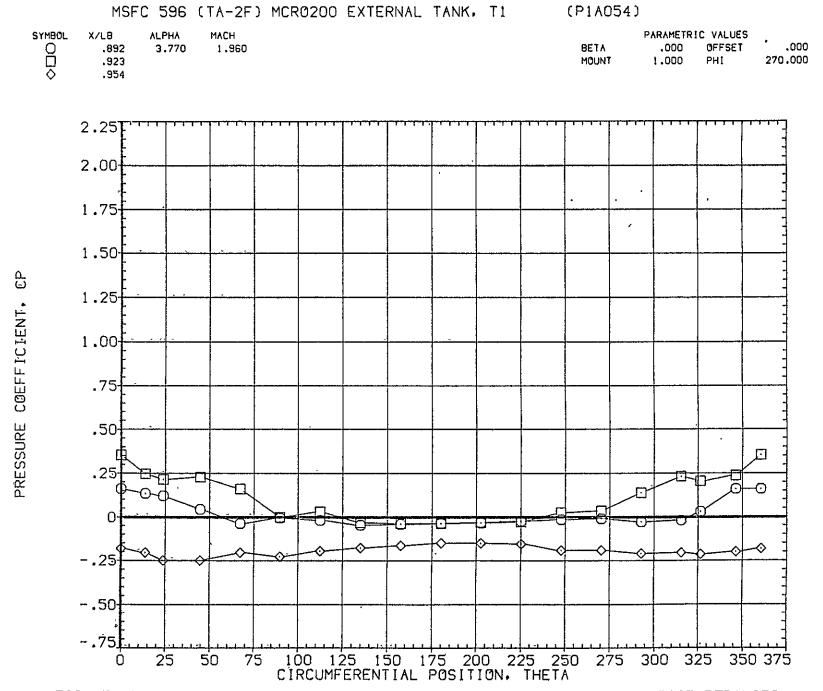
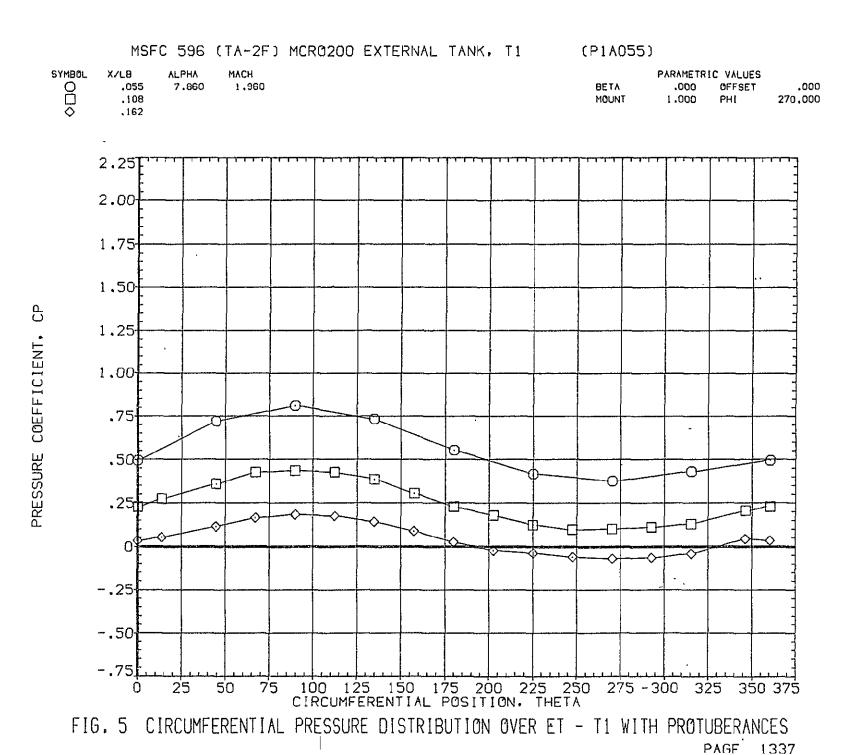


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1336



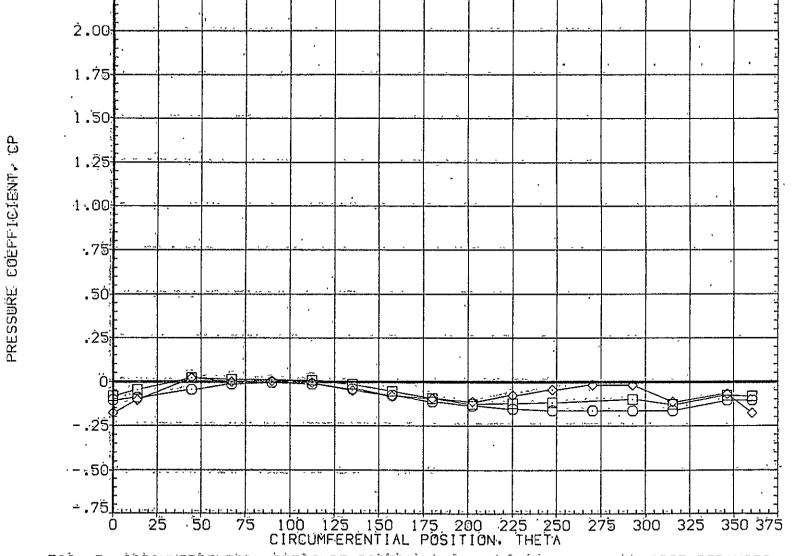


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1338

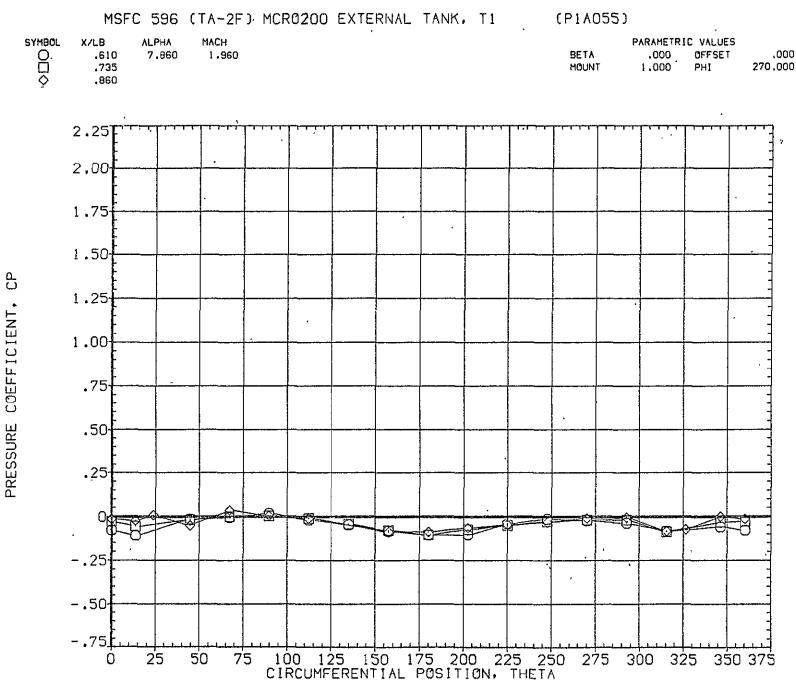
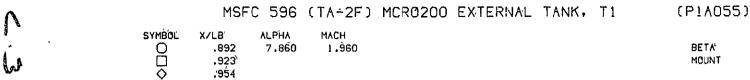


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1339



954

PARAMETRIC VALUES OFFSET .000 BETA .000 270.000 MOUNT 1.000 PH1

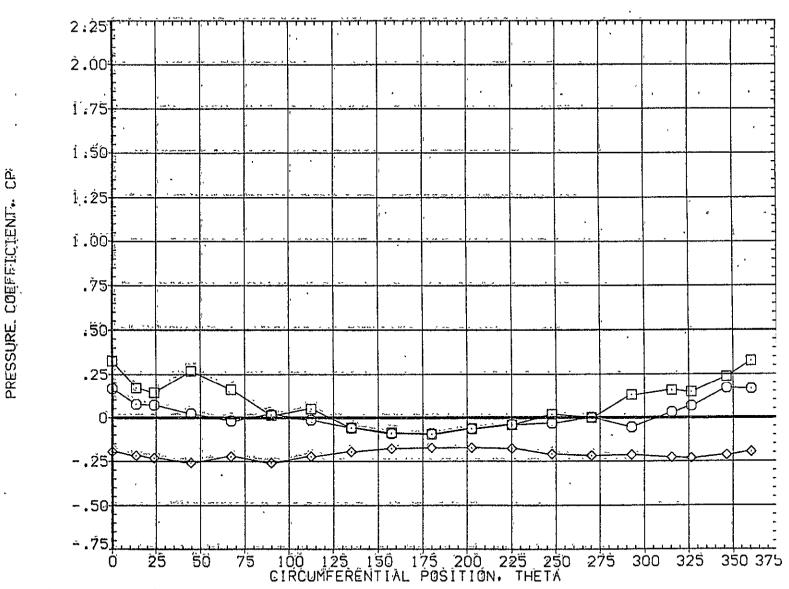


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1340

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A056) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 12.570 1.970 20,000 .055 BETA .000 . OFFSET .108 MOUNT 1.000 270.000 PH! .162 2.25 2.00-1.75 1.50 $^{\circ}$ 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 -.25 -.75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1341

25

75

50

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

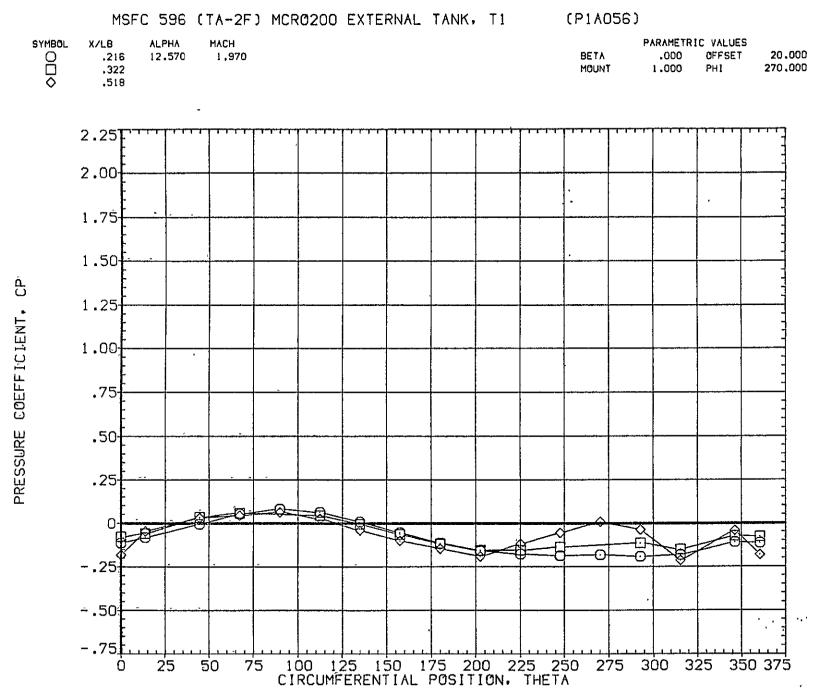


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1342

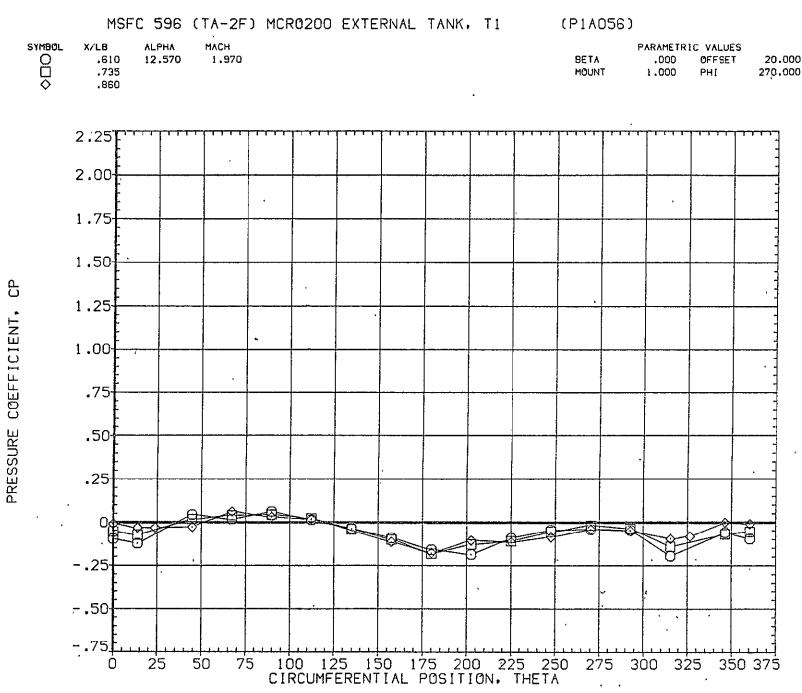


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

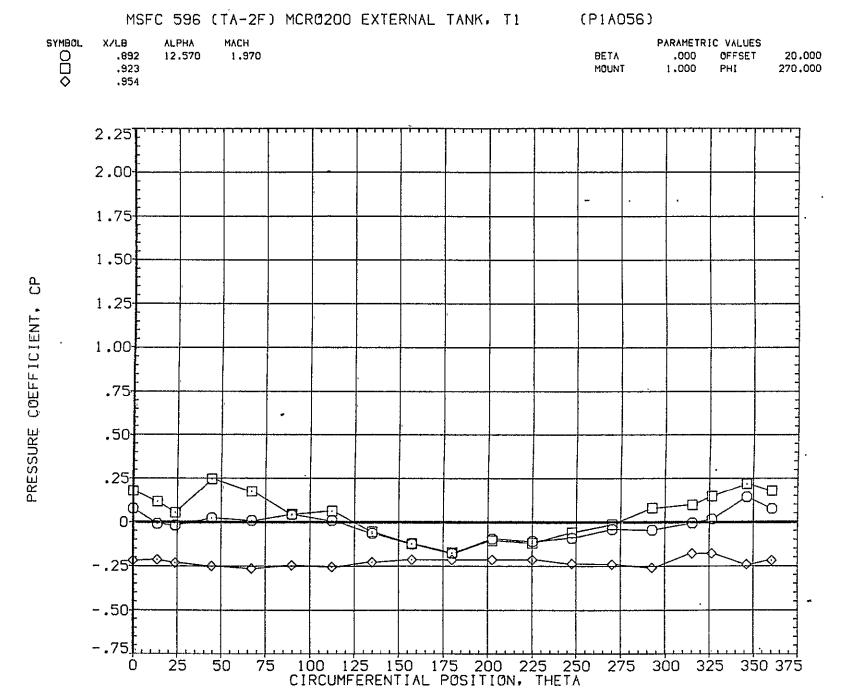


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1344

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

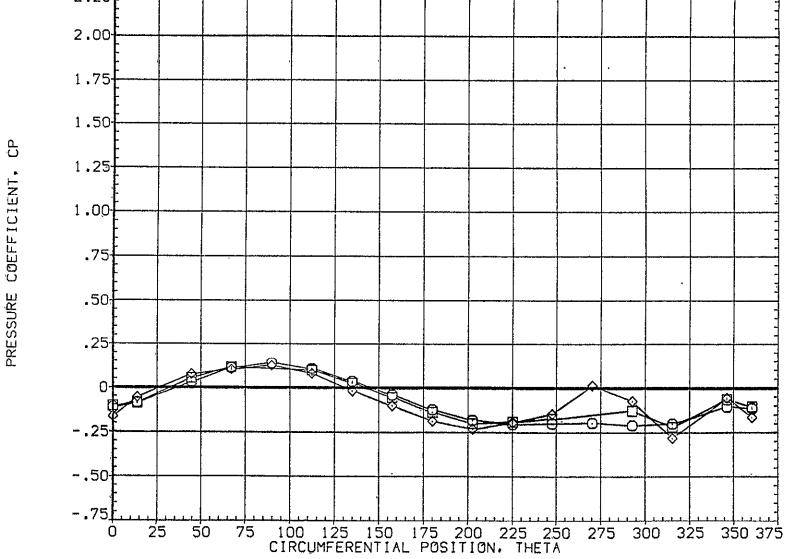


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANÇES PAGE 1346

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1347

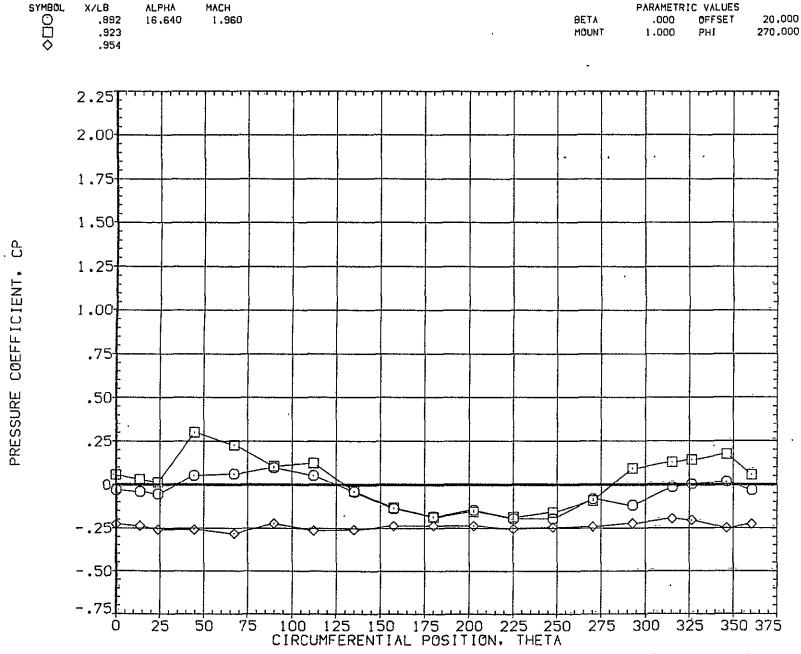


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1348

SYMBOL O O	MSF x/LB .055 .108 .162	FC 596 ALPHA 20.740	(TA-21 MACH 1.960	•	₹₫200	EXTE	RNAL	TANK	. T1		(P1A)	F	PARAMETR .000 1.000	IC VALUES OFFSET PHI	20.000 270.000
	2.25	, , , , , , , , , , , , , , , , , , , 		 	 		11111	1111	1111	 	 	1	 		
	2.00		,							ļ					
	1.75				ļ		,								<u>-</u>
<u>.</u>	1.50]			
	1.25												 		
COEFFICIENT,	1.00		0			a						,			
OEFF	.75	. /		 											
	.50					E		<u>a</u>							0
PRESSURE	.25					a		T <u>r</u>	\				-0	-	
۵	0	\(\rightarrow\)					N.	*		<u> </u>					<u> </u>
	25		.						\	\	 ♦	→	- O		

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1349

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

· 25

50

75

275 300 325 350 375

ALPHA

MACH

SYMBOL

X/LB

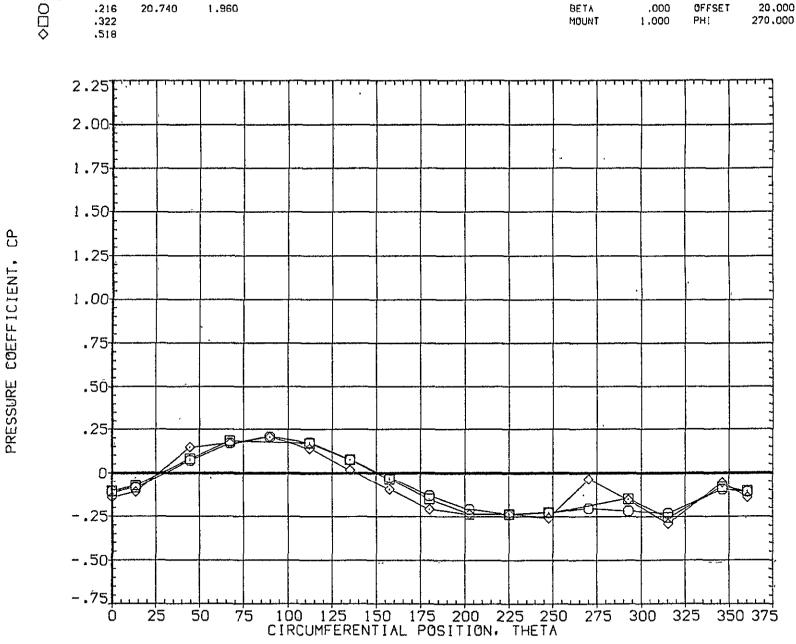


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1350

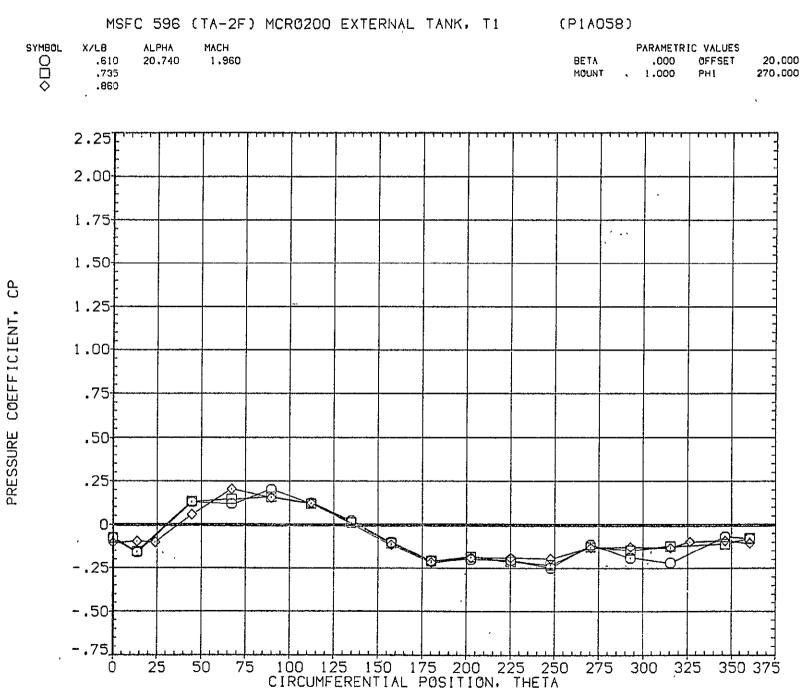


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





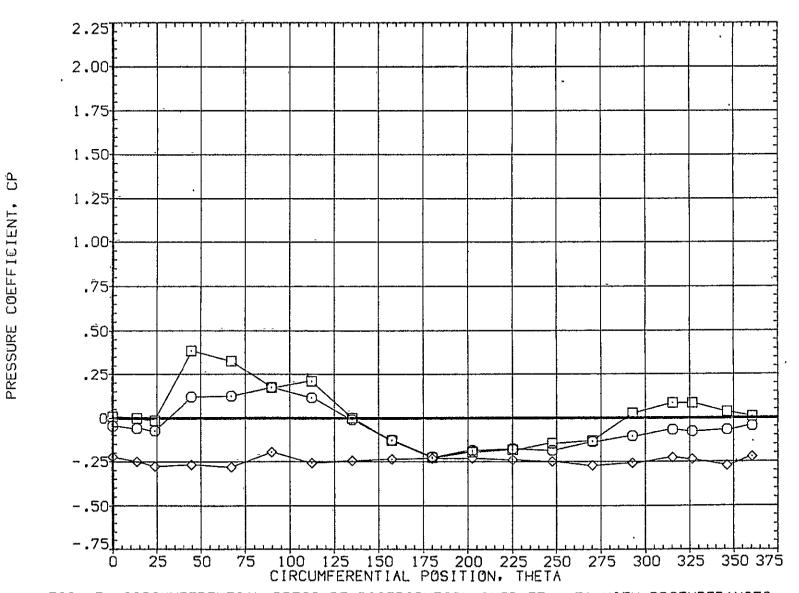


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1352

MSFC 596	(TA-2F)	MCR0200	EXTERNAL	TANK,	T 1	(P1A059)

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUE	PARAMETRIC VALUES					
Ó	.055	24.850	1.960	BETA .000 OFFSE	T 20.000					
Ŏ	.108			MOUNT 1.000 PHI	270.000					
\Diamond	.162									

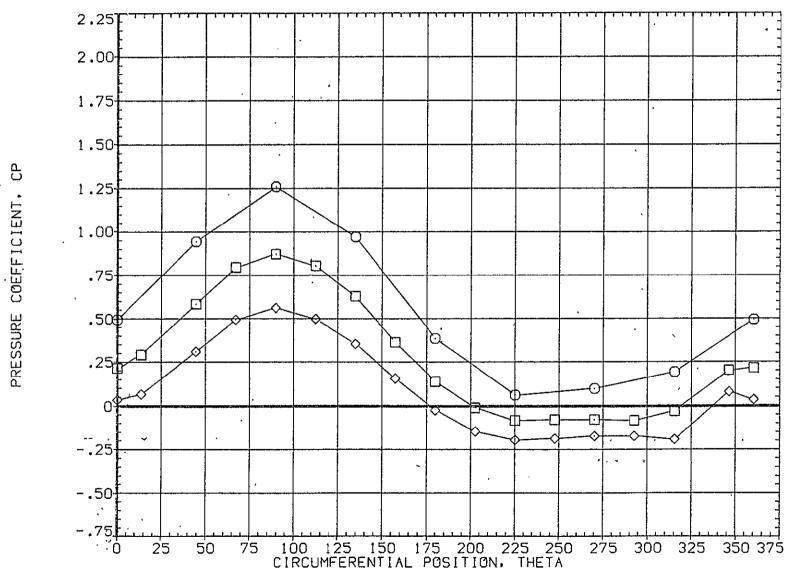


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

.75₅

.50-

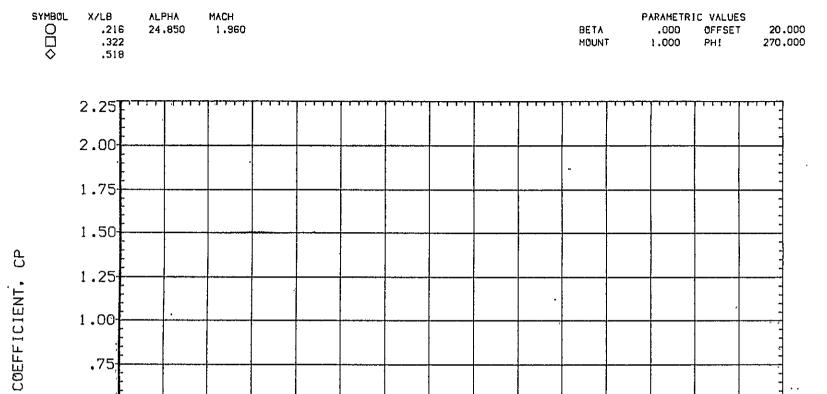
.25

-.25

-.50

50

PRESSURE



CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1354

100 125 150 175 200 225 250 275 300 325 350 375

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A059) SYMBOL X/LB ALPHA MACH PARAMETRIC VALUES 000 .610 24.850 1.960 BETA .000 OFFSET 20,000 1.000 PHI 270,000 .735 MOUNT .860 2.00 1.75 1.50 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50

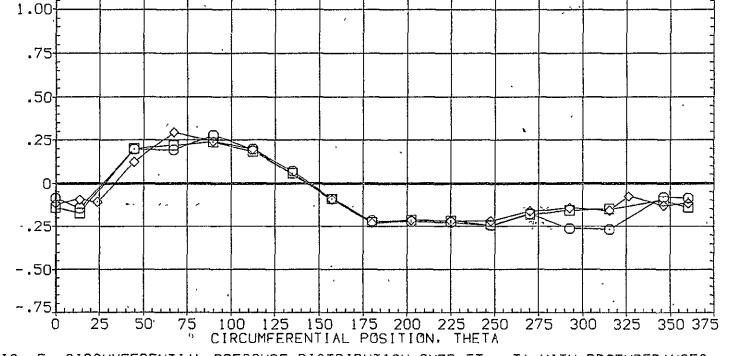


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



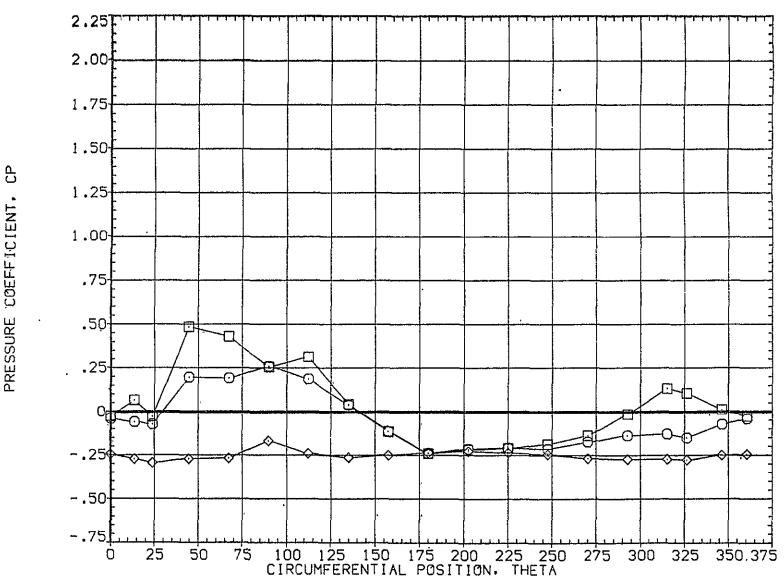


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1356

(P1A060) MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 SYMBÖL O O O X/LB **ALPHA** MACH PARAMETRIC VALUES OFFSET 1,960 BETA .000 20,000 28.930 .055 PHI 1.000 270,000 MOUNT .108 .162 2.00 1.75 1.50 $^{\circ}$ 1.25 PRESSURE COEFFICIENT, 1.00 .75 .50⁶ - 125 -.50--.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 25 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1357

SYMBOL

X/LB

ALPHA

MACH

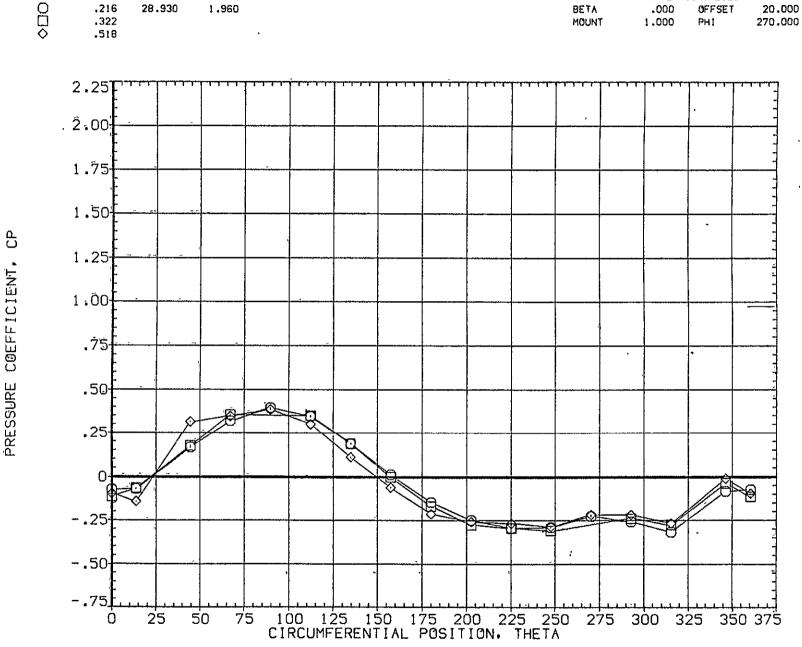


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1358

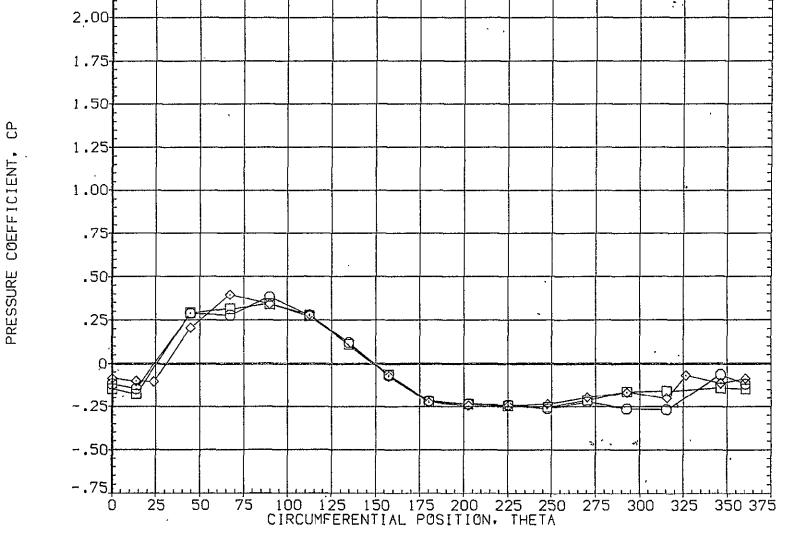


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1359

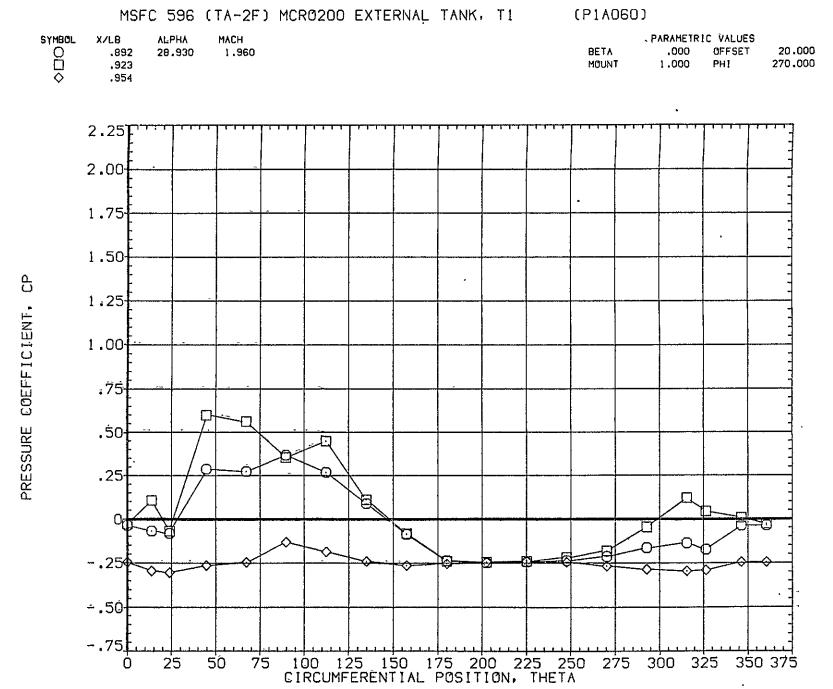
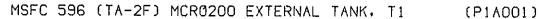


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1360



SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	PARAMETRIC VALUES							
Q	.055	-8.360	3.480	BETA .OOD OFFSET	.000							
	.108			IH9 COO, 1 TAUCM	.000							
\Diamond	.162											

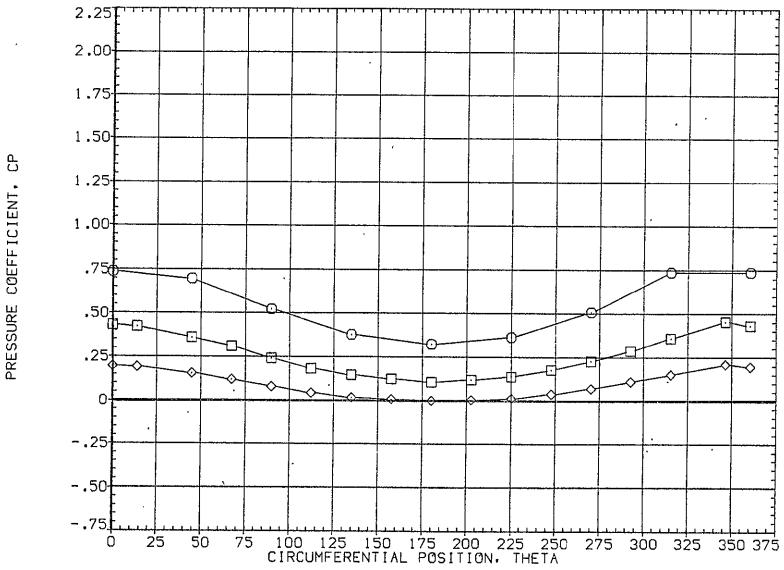


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE_ 1361

X/LB

.216

ALPHA -0.360

MACH 3:480

BETA

PARAMETRIC VALUES

.000

OFFSET

.000

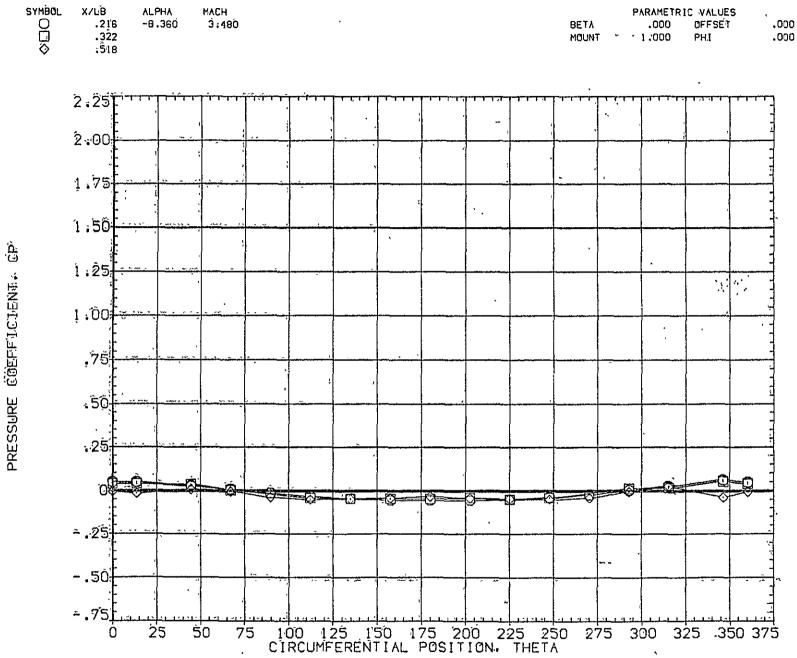


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1362

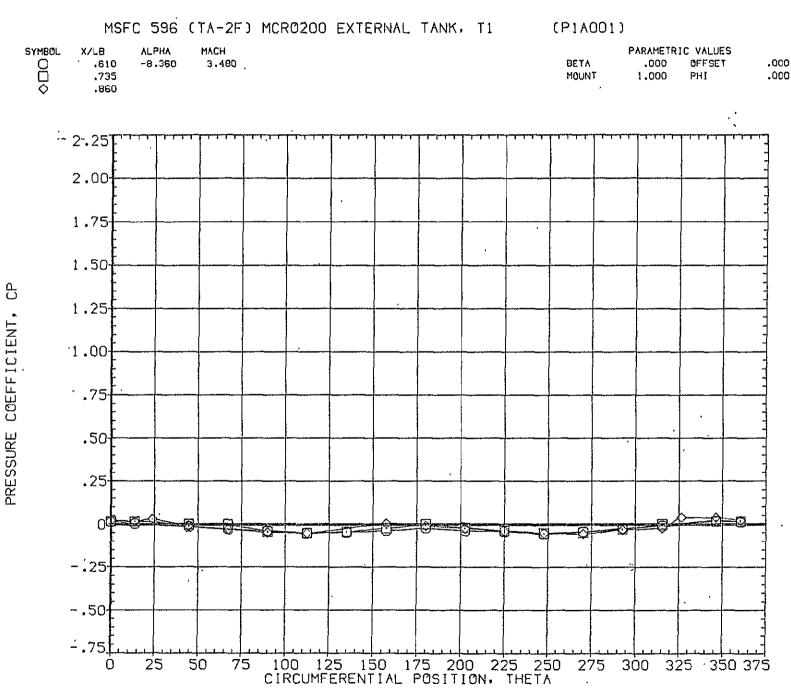


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

X/LB

.892

ALPHA

MACH-

3,480

BETA

PARAMETRIC VALUES

OFFSET

.000

2000

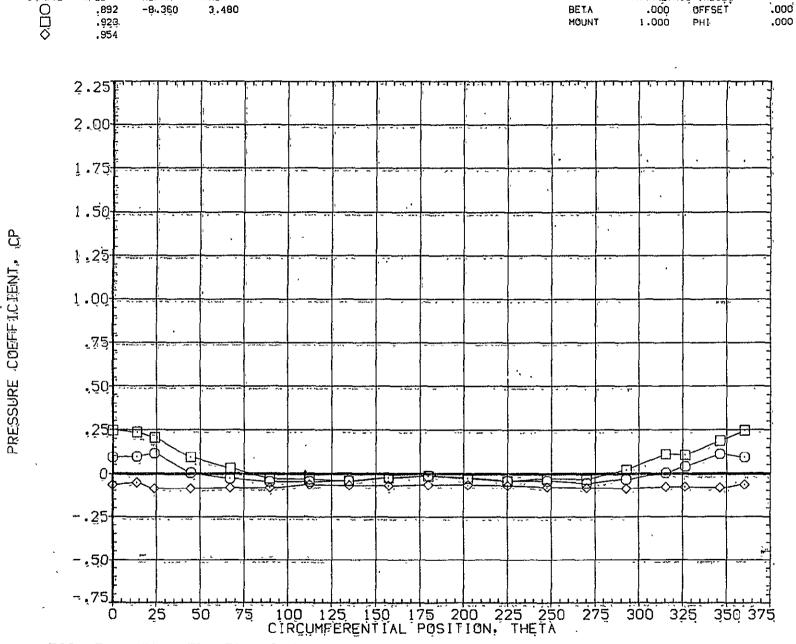


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1364

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1365



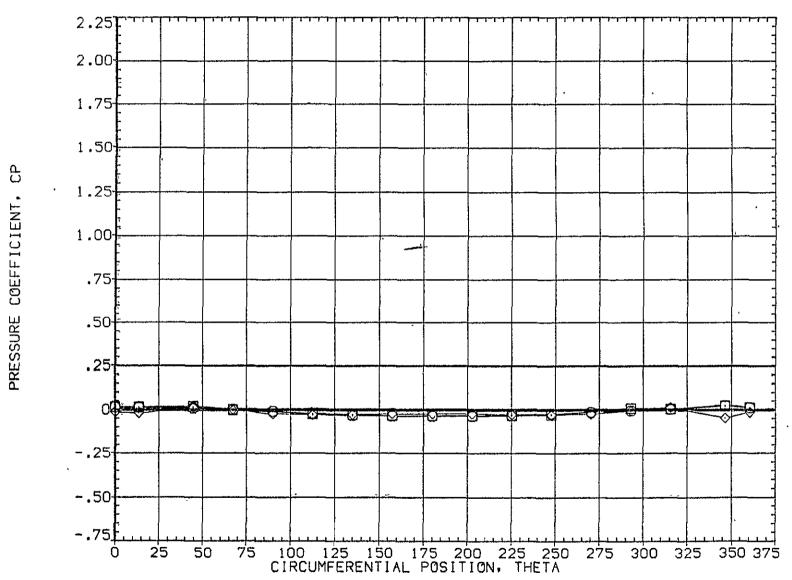


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1366

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PARAMETRIC VALUES

SYMBOL

X/LB

ALPHA

MACH

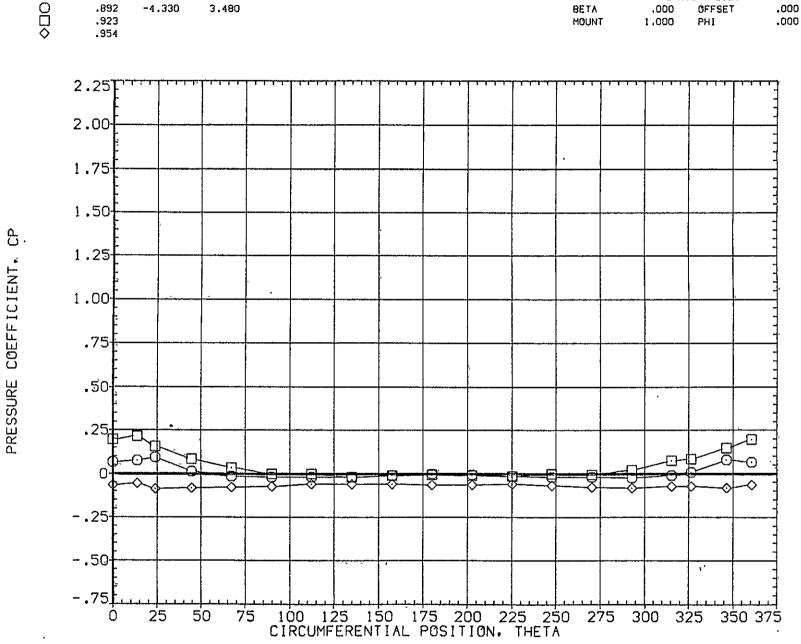


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1368

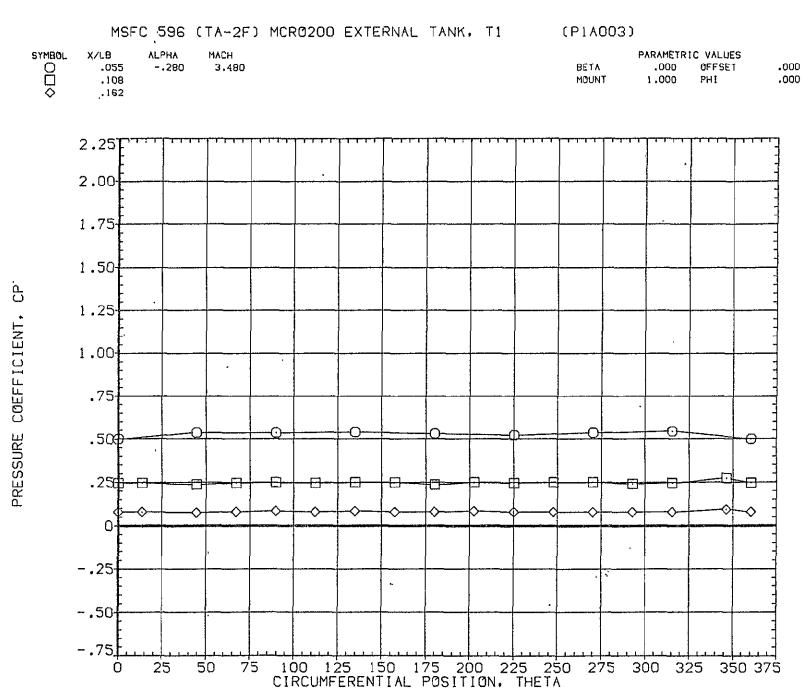


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1369

.518

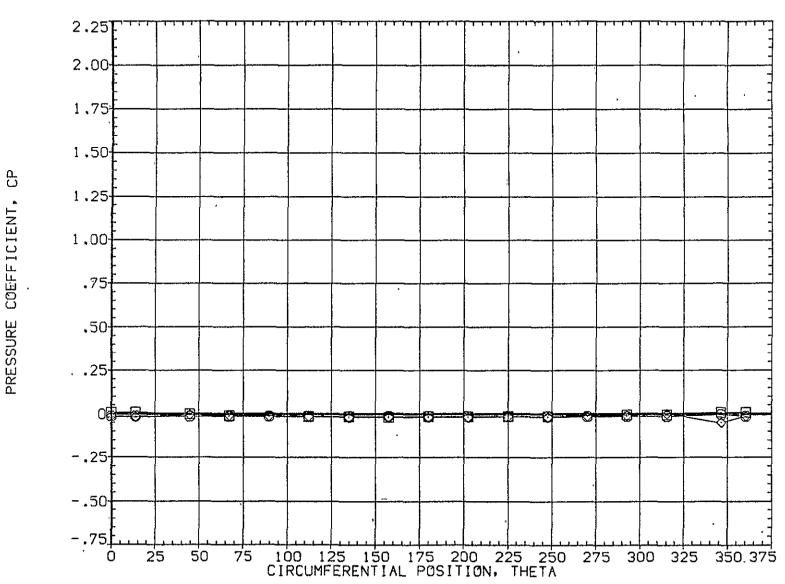


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1370

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
- PAGE 1371

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.50

-.75£

50

75

X/LB

.892

ALPHA

-.280

MACH

3.480

(P1A003)

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

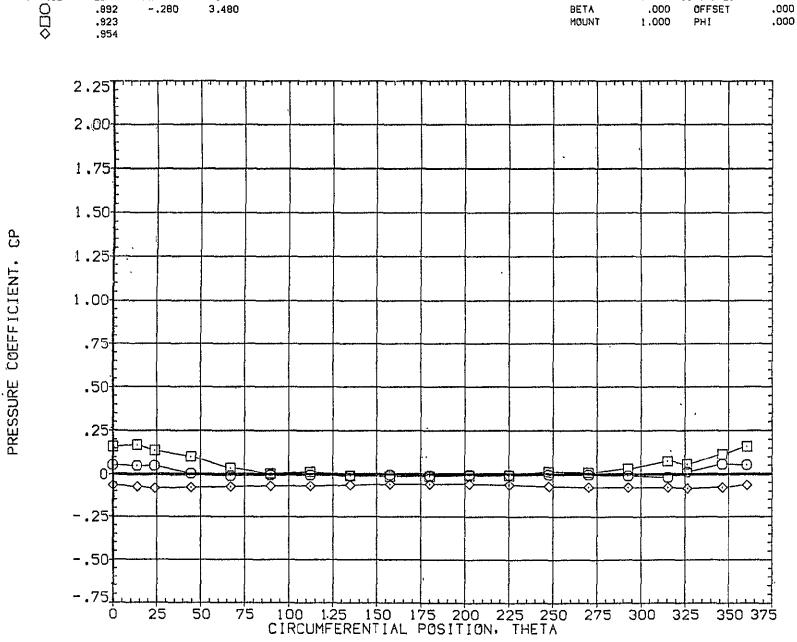


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1372

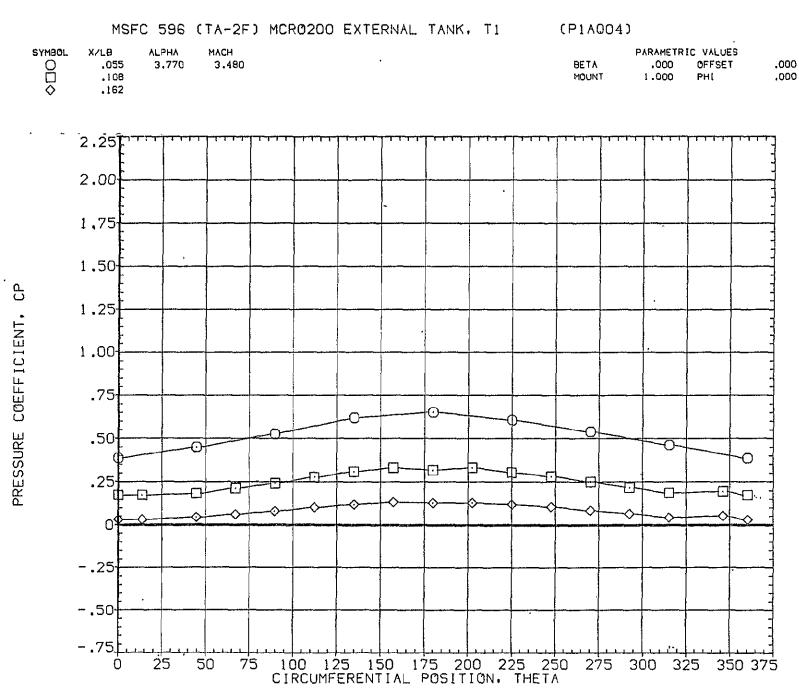


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1373

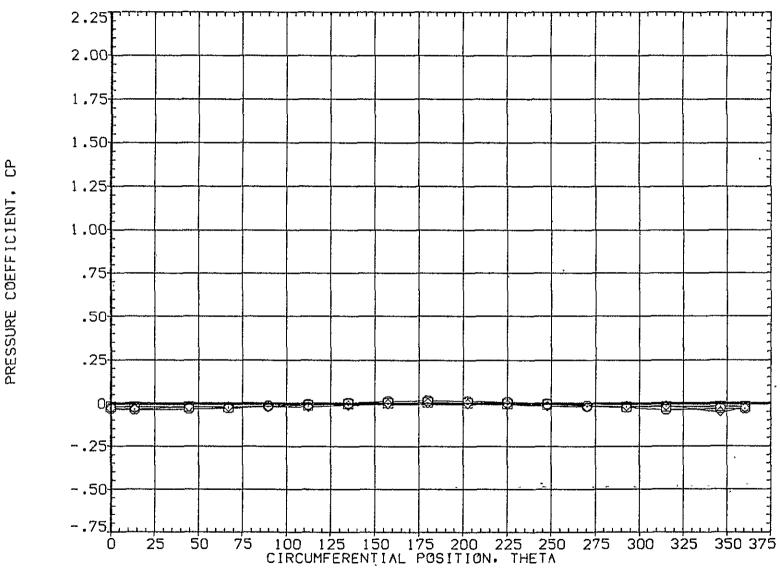


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1374

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A004)

SYMBOL X/LB

ALPHA

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	75 50 25 00 75 25 75 0	50 25 00 75 50 25	50 25 00 75 50 25	50 25 00 75 50 25 25	50 25 00 75 50 25 50	50 25 00 75 50 25 50 75 0 25 50 75	50 25 00 75 50 25 50 75 0 25 50 75 100	50 25 00 75 50 25 00 25 00 25 00 25 00 25 10 125 10 125 10 125 10 125 10 10 11 125 13 14 15 16 16 16 16 16 16 16 16 16 16	50 25 00 75 50 25 00 25 00 25 00 25 00 00 00 00 00 00 00 00 00 0	50 25 00 75 50 25 50 75 0 25 50 75 100 125 150 175 2	50 25 00 75 50 25 00 25 00 25 00 25 00 25 100 125 150 175 200 200 200 200 200 200 200 20	50 25 00 75 50 25 00 25 00 25 00 25 00 00 00 00 00 00 00 00 00 0	50 25 00 75 50 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 00 00 00 00 00 00 00 00 0	50 25 00 75 50 25 50 75 0 25 50 75 100 125 150 175 200 225 250 275 3	50 25 00 75 50 25 50 75 75 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 25 00 00 00 00 00 00 00 00 00 0	50 25 00 75 50 25 00 25 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



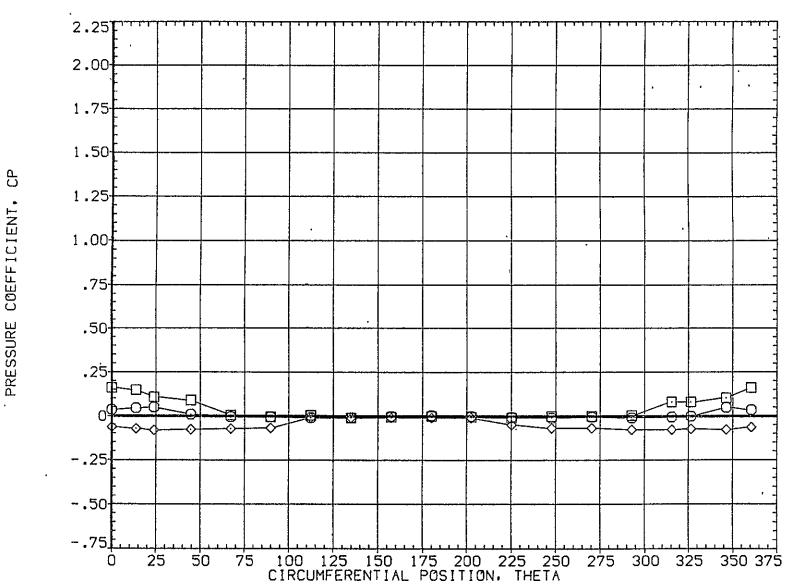


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1376

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1377



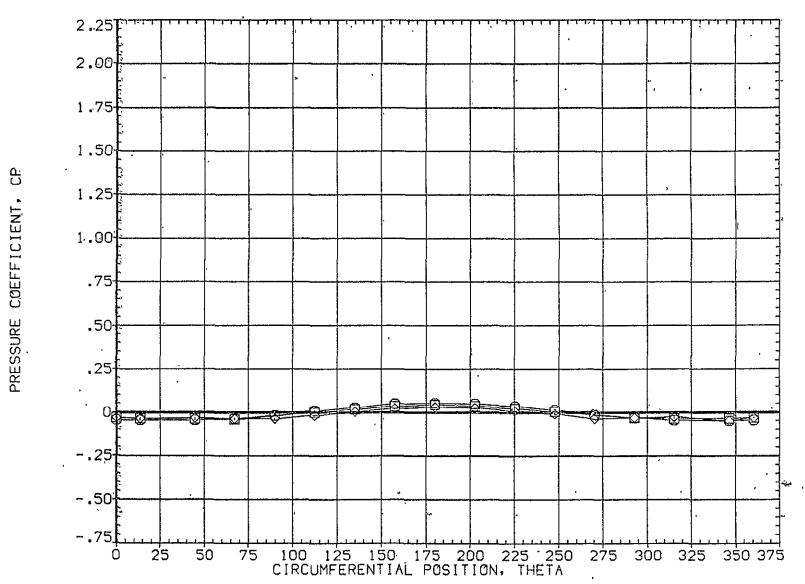


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A005)

.000

.000

ALPHA 7.800 PARAMETRIC VALUES SYMBOL X/LB 3,480 .000 OFFSET 000 BETA .610 1.000 PHI .735 MOUNT .860 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25-75 75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA --- TI WITH PROTUBERANCES

PAGE 1379



X/LB

ALPHA

MACH

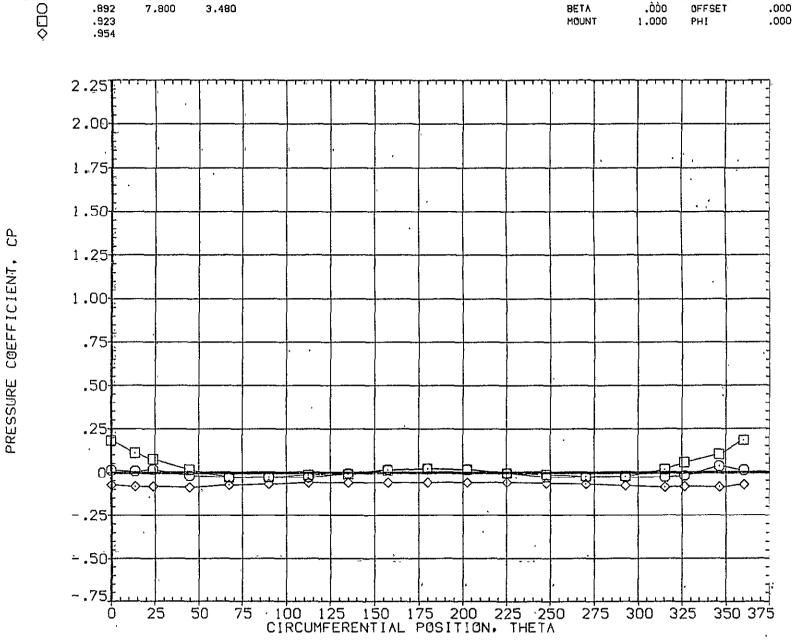


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1380



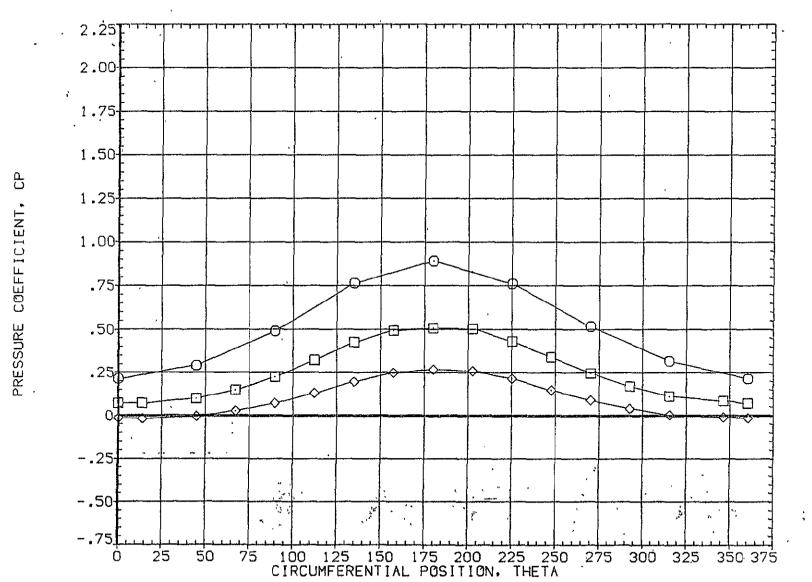


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1381



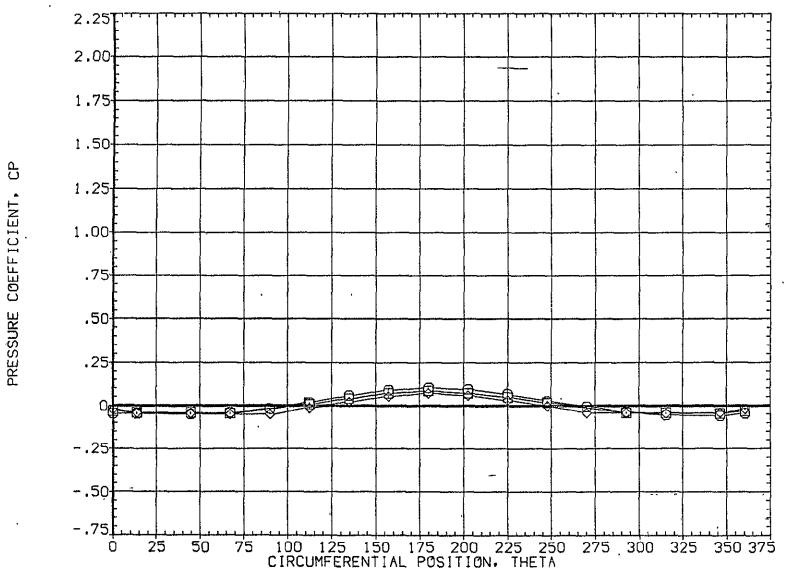


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1382

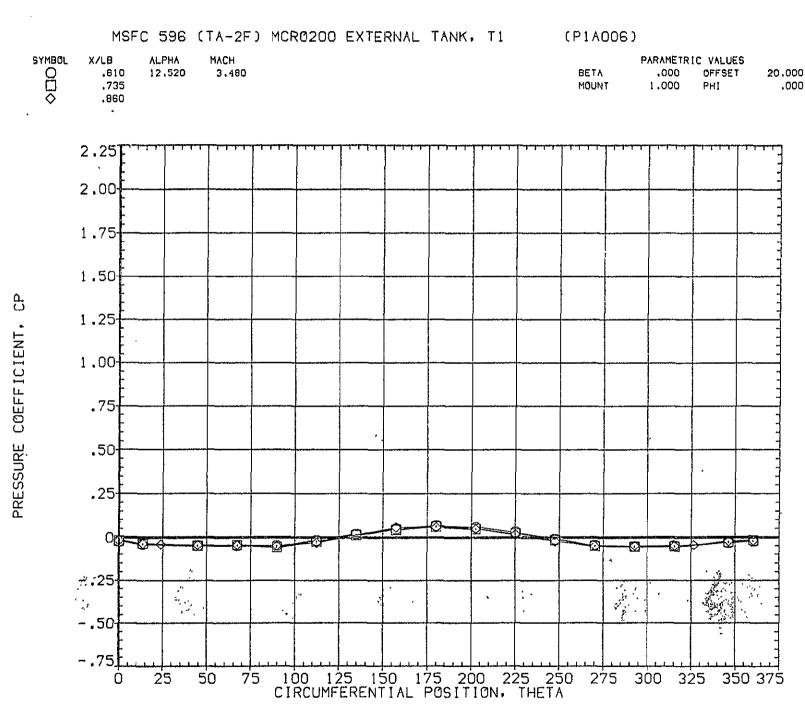


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

X/LB

ALPHA

MACH

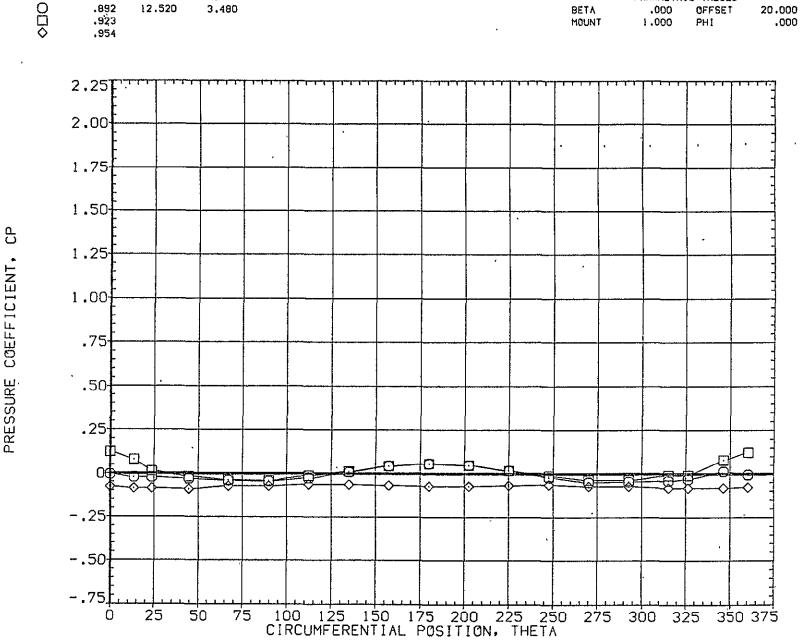


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1384

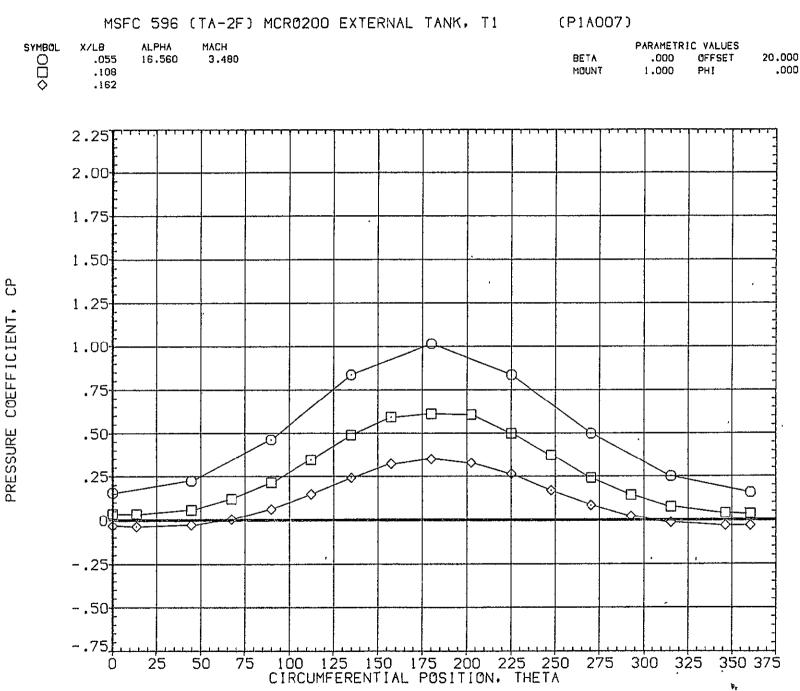


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1385

X/LB

ALPHA

MACH

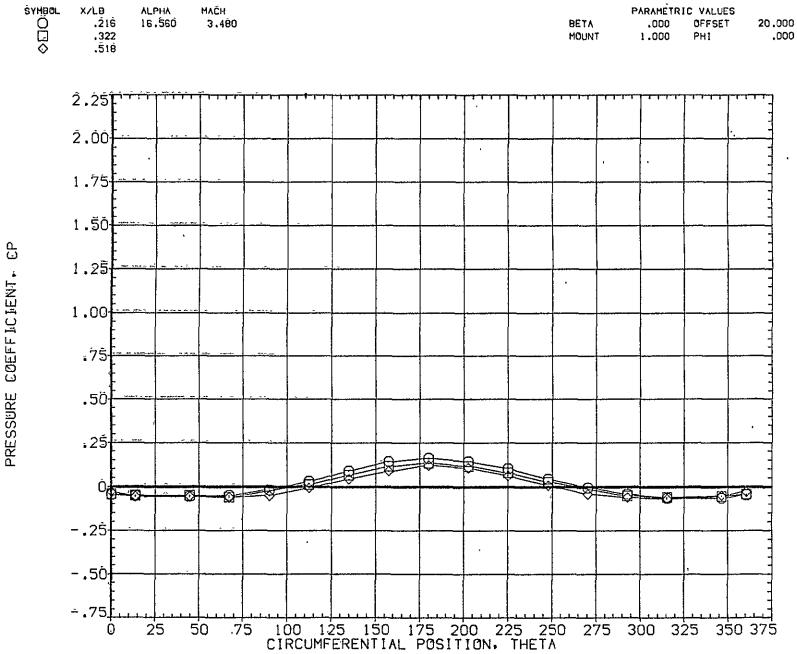


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1386

SYMBOL **ALPHA** X/LB MACH PARAMETRIC VALUES 000 16.560 .610 3.480 .000 OFFSET 20.000 BETA .735 MOUNT 1.000 PHI .000 .860

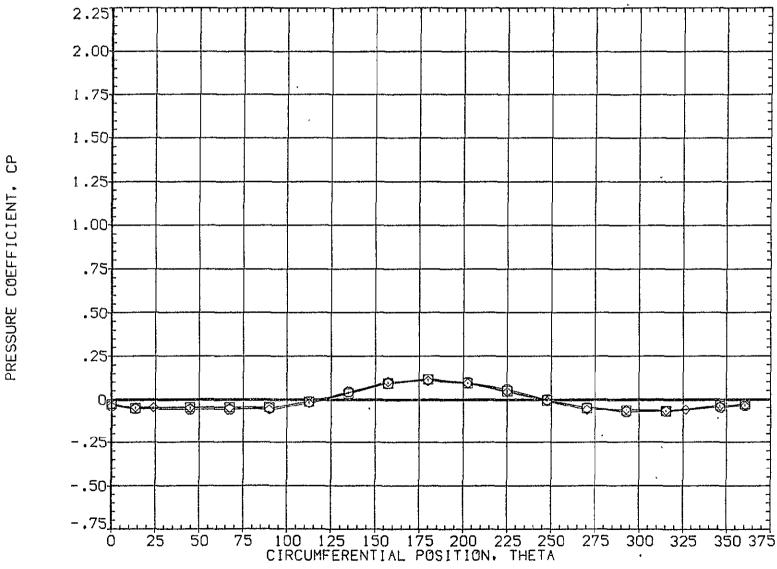


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1387

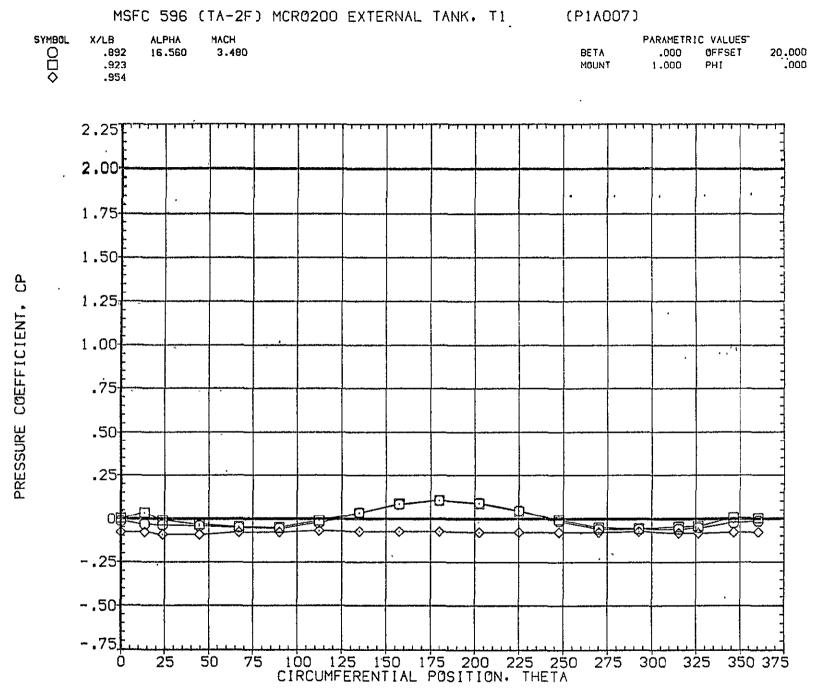


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1388

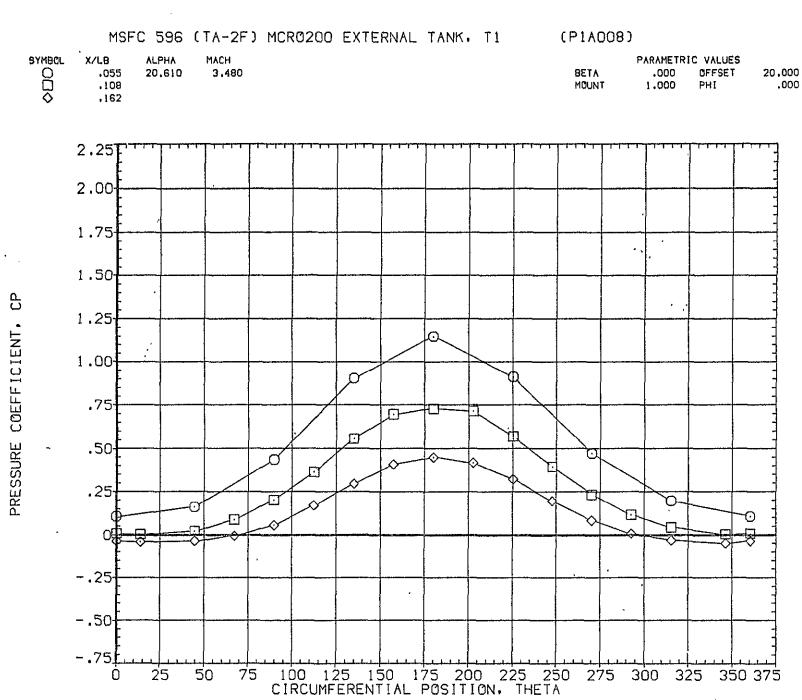


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE . 1389

SYMBOL O O O	X/LB .216 .322 .518	ALPHA 20.610	MACH 3.480									г	PARAMETR .000 1.000	IC VALUES OFFSET PHI	20.000
	2.25	،،،،، ،	·	-1-1-1-		71.1	 	, , , , , , , , , , , , , , , , , , , 	, , , , , ,	 	1	, , , , , , , , , , , , , , , , , , , 		T	
	2.00								<u> </u>			<u> </u>			
	1.75												•	,	
	1.50			·											
	1.25		-												
	1.00			· · · · · ·											
	.75						· ·								
	.50			·											
•	.25			·			8	8		<u> </u>					
	0	- Ø Ø	<u> </u>	₩				<u> </u>				-c	 		
	25									,			-		
	50			 -											
	75 0	25	50 7	5 1	00 1: RCUMF	25 15 FREN	50 1	75 20	00 2:	25 2 THET	50 2	75 :	300 3	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1390

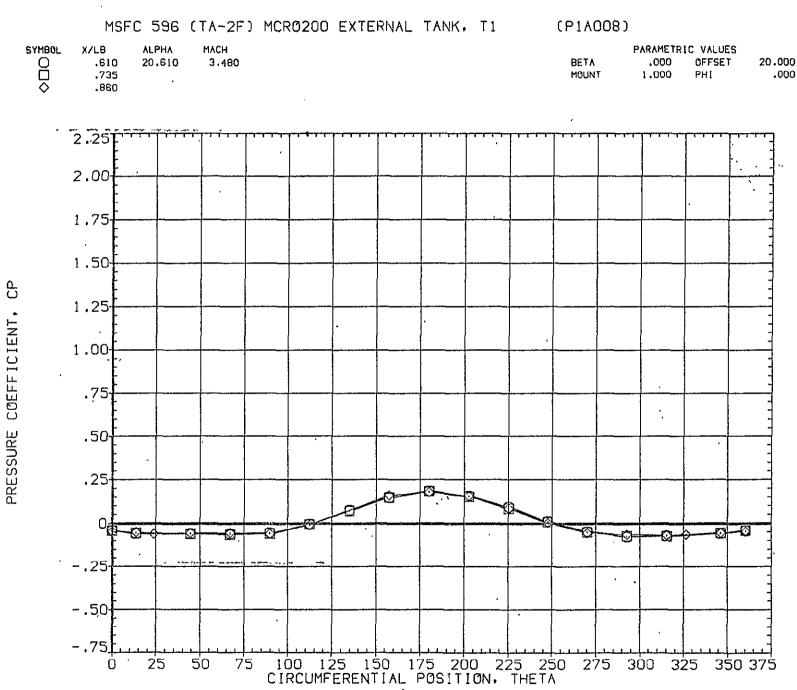


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1391



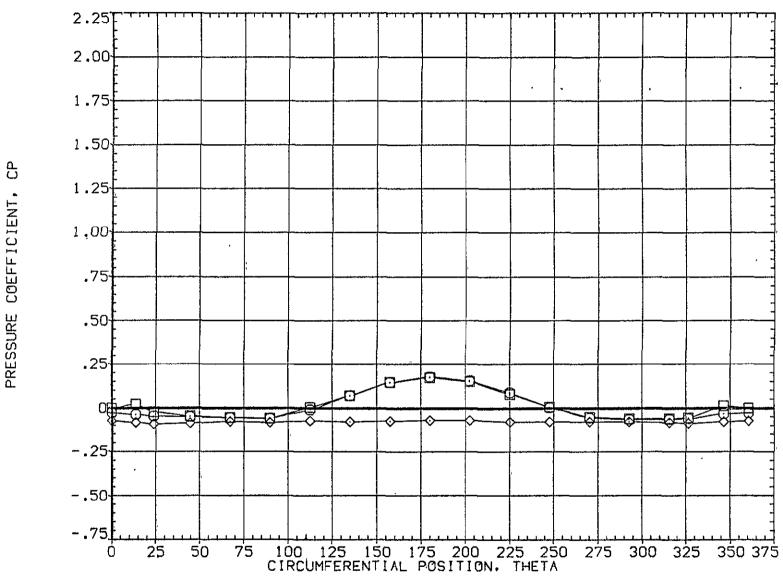


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1392

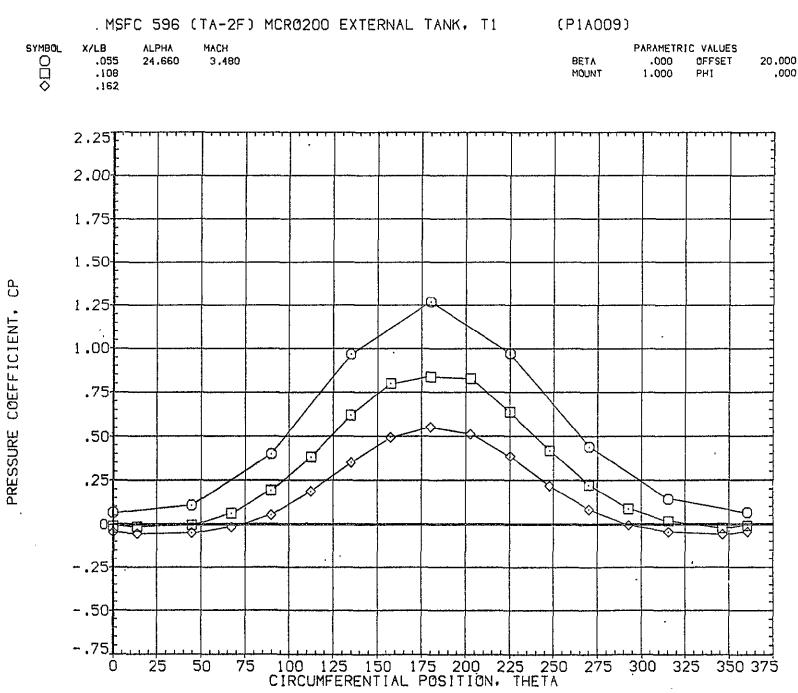


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1393

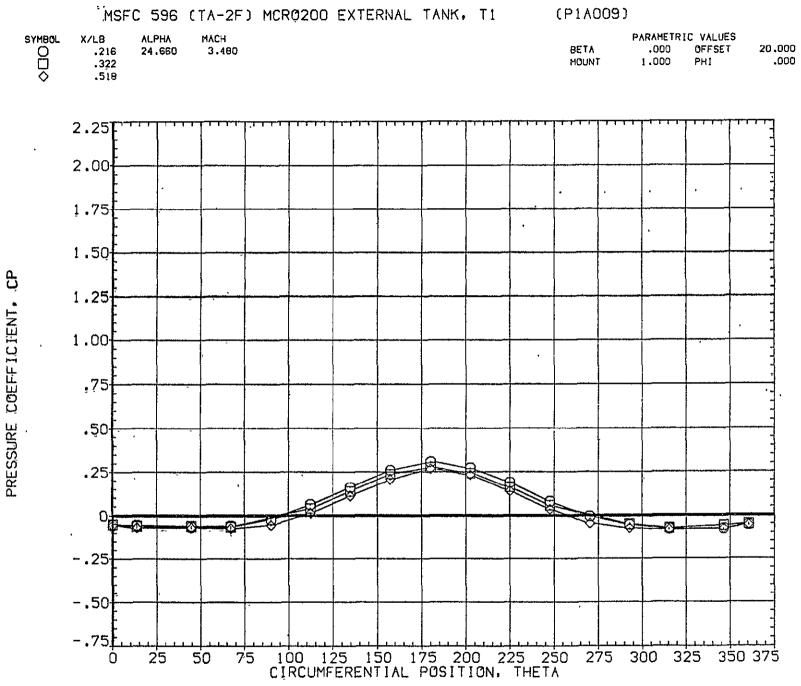


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1394

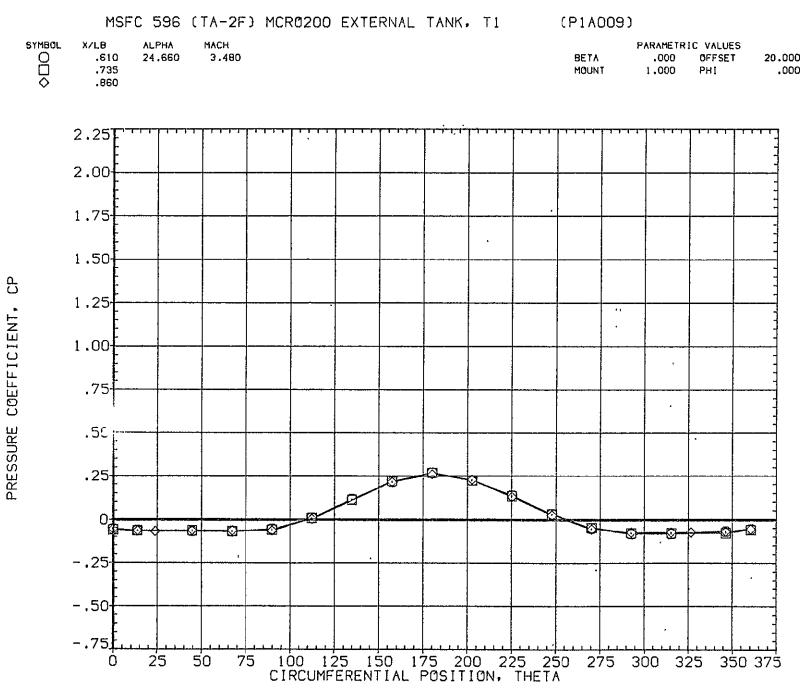


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1395

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1396

CIRCUMFERENTIAL POSITION. THETA

25

0

50.

75

100 125 150 175 200 225 250 275 300 325 350 375

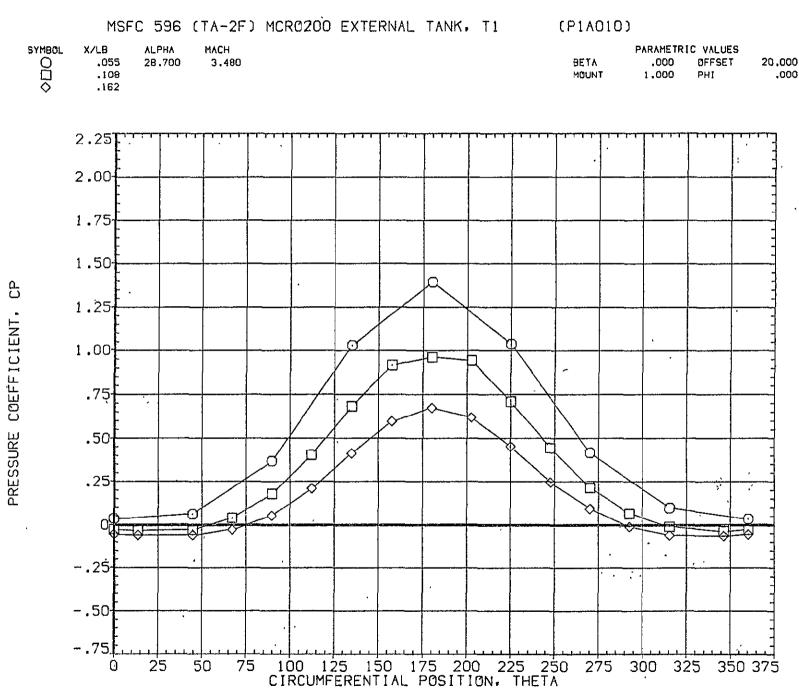


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 4397



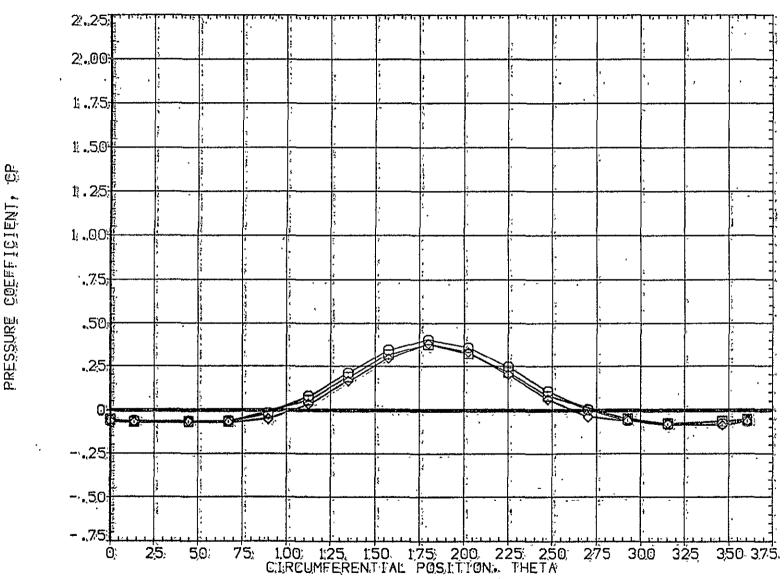


FIG. 5. CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE: 1398



(P1A010)

SYMBOL O O X/LB **ALPHA** MACH PARAMETRIC VALUES .610 28.700 3.480 BETA OFFSET .000 20.000 .735 MOUNT 1.000 PHI .000 .860 2.25 2.00 1.75 1.50 SP 1.25 PRESSURE COEFFICIENT, 1.00 .75 .50 .25 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1399

X/LB

ALPHA

MACH

(P1A010)

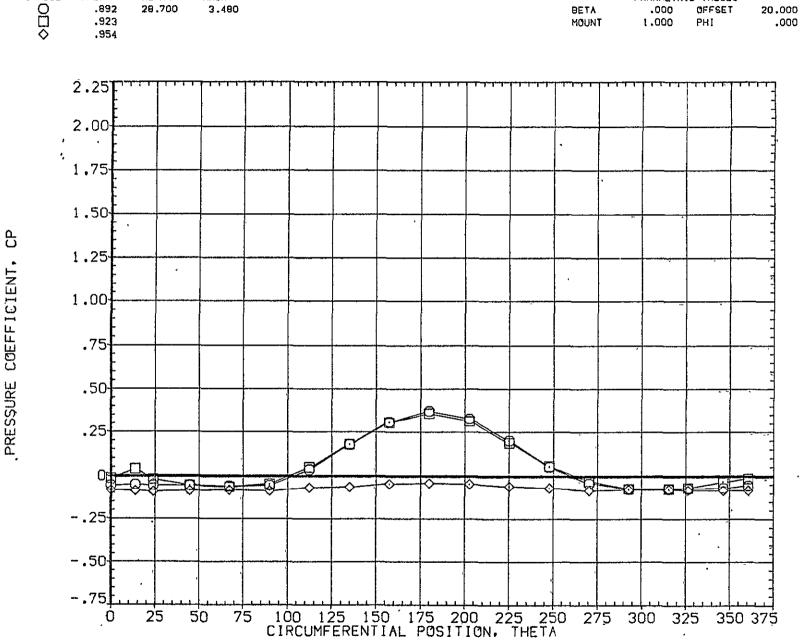


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1400

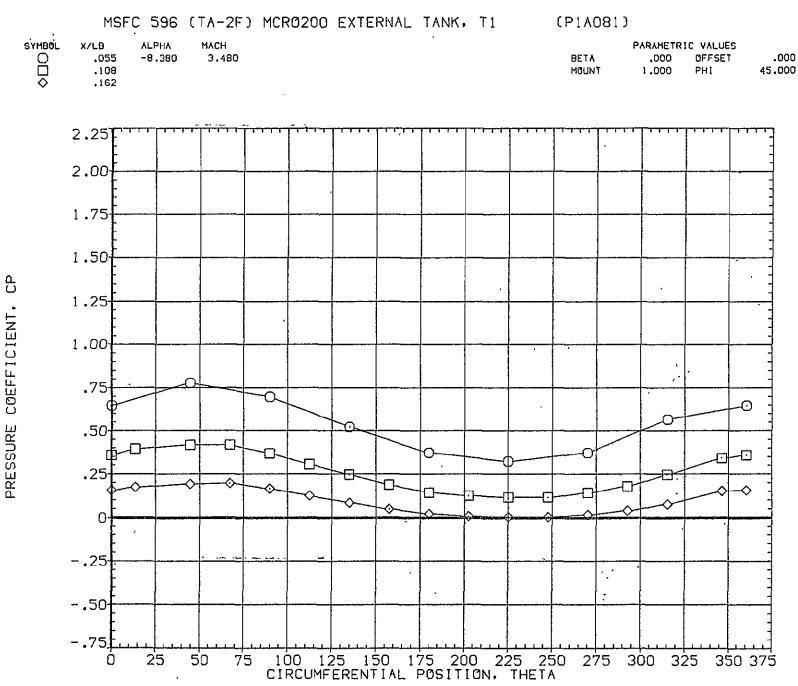
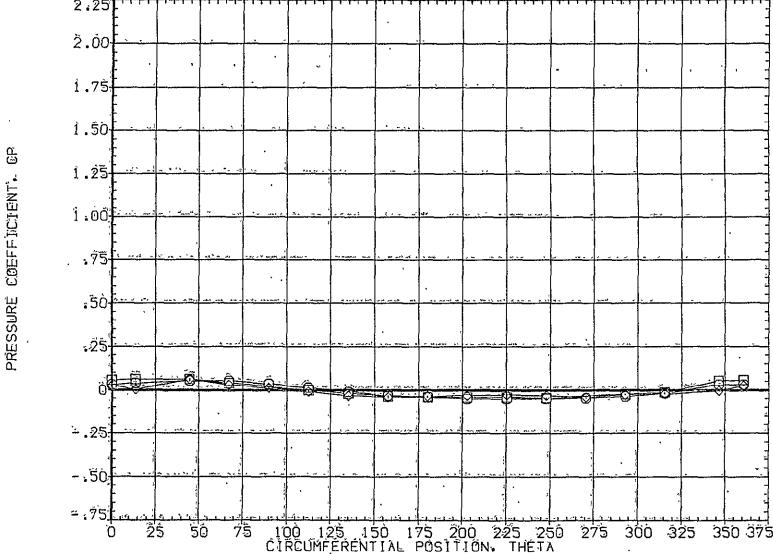


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER £T - T1 WITH PROTUBERANCES
PAGE 1401



FÌG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - II WITH PROTUBERANCES
PAGE 1402

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1403

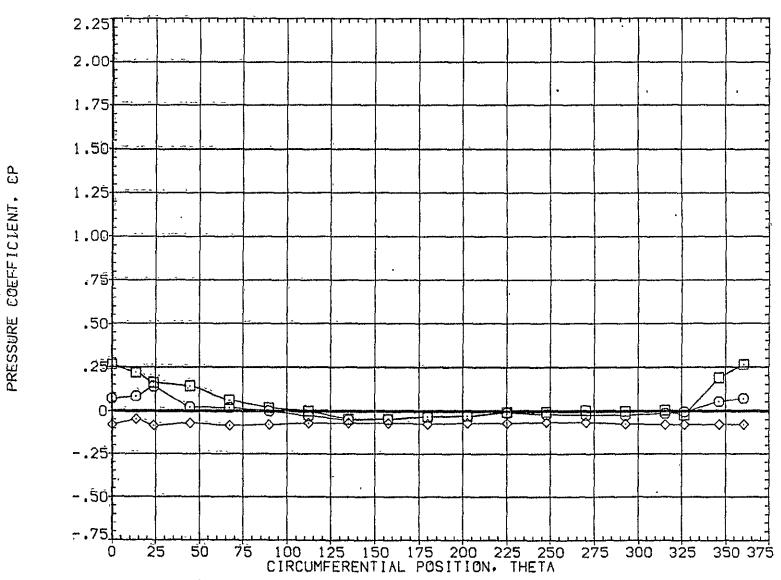


FIG. 5 CIRCUMFÉRENTIAL PRÉSSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1404

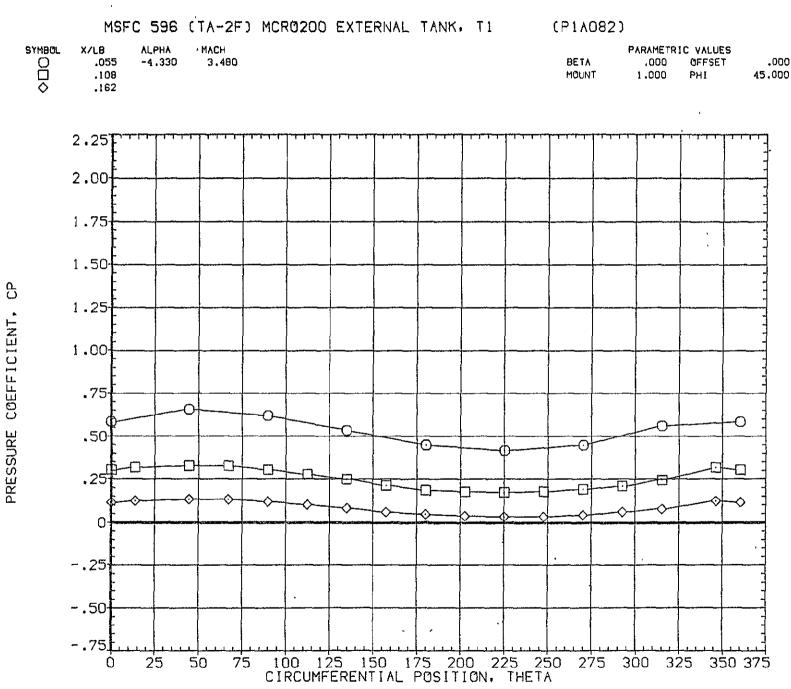


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1405

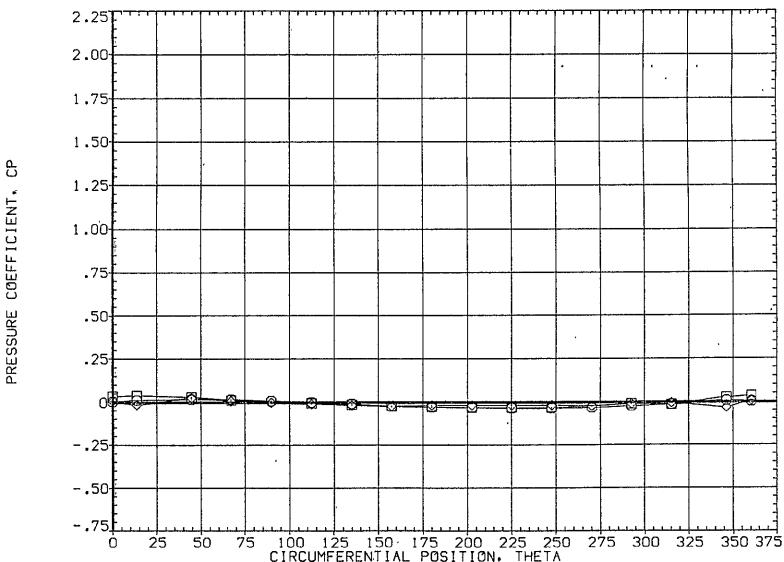
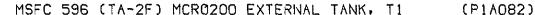


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1406



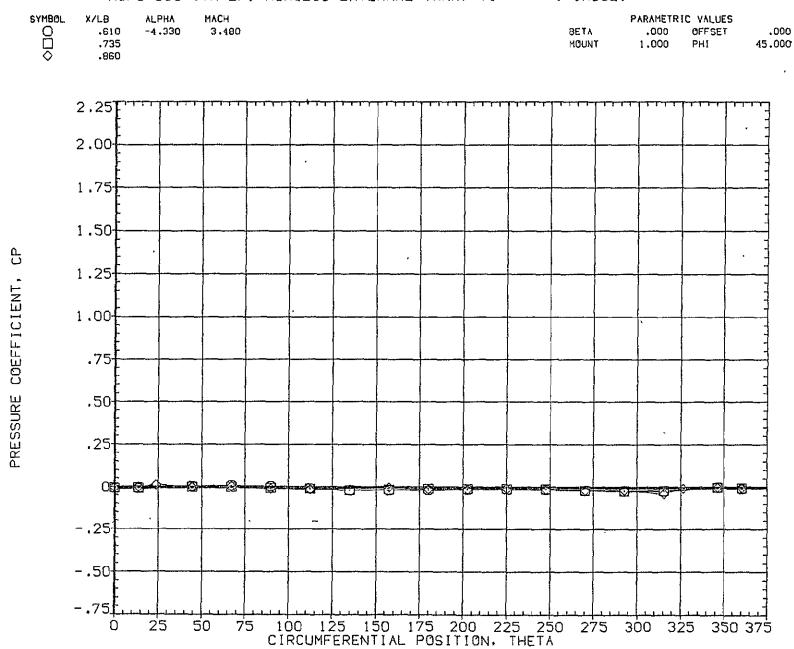


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1407

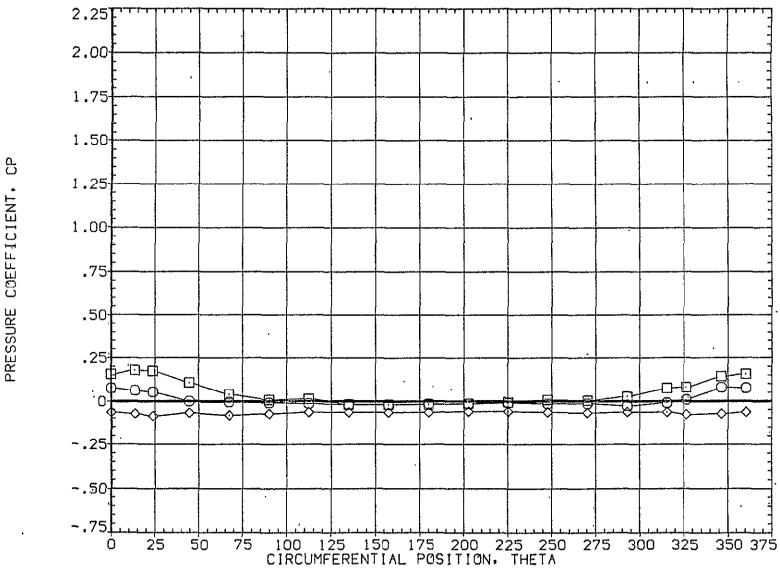


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1408

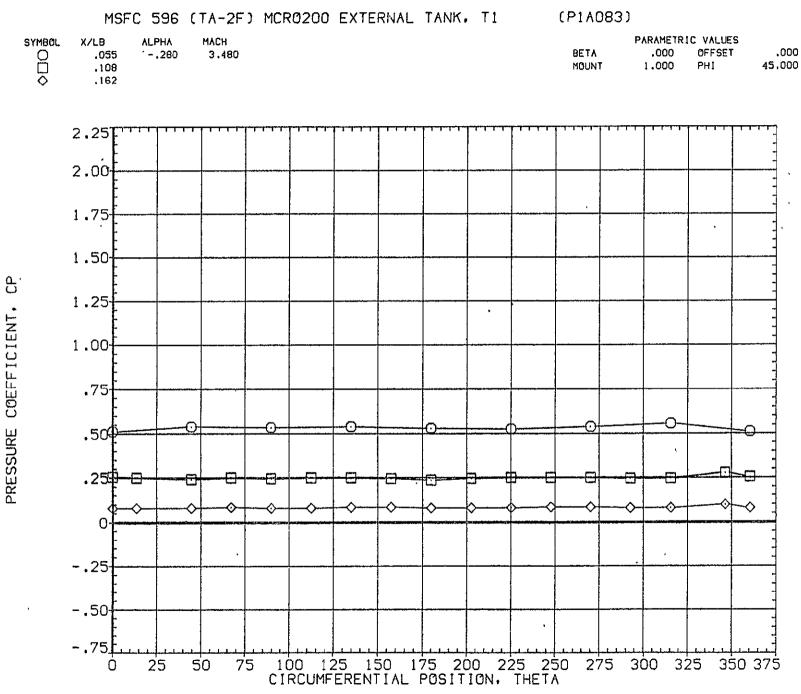


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1409

X/LB

ALPHA

MACH

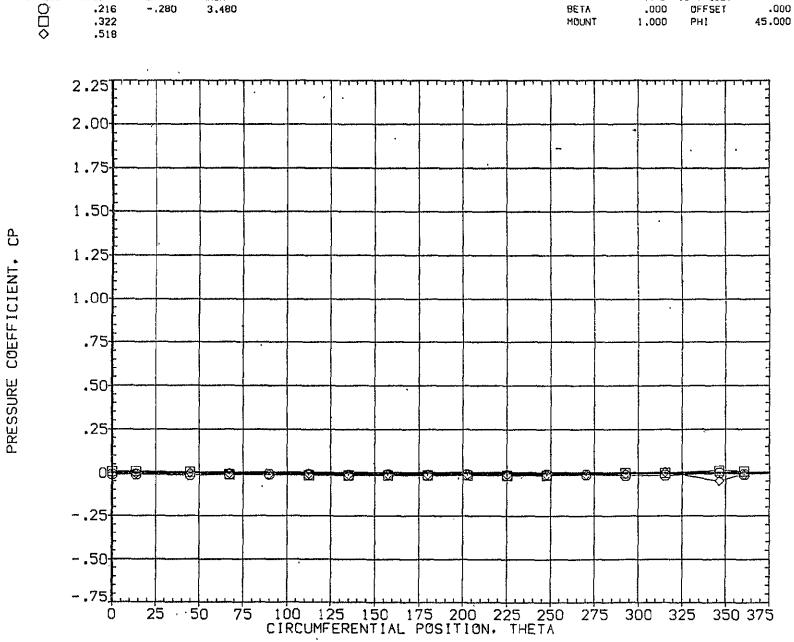


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1410

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1411

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1412

CIRCUMFERENTIAL POSITION. THETA

100 125 150 175 200 225 250

275 300 325 350 375

-.50

-.75]

MSEC	596	rta2Fi	MCRM200	FXTERNAL	TANK.	T 1

SYMBOL PARAMETRIC VALUES X/LB **ALPHA** MACH 000 3.480 BETA .000 OFFSET .000 .055 3.770 .108 MOUNT 1.000 PHI 45,000 .162

(P1A084)

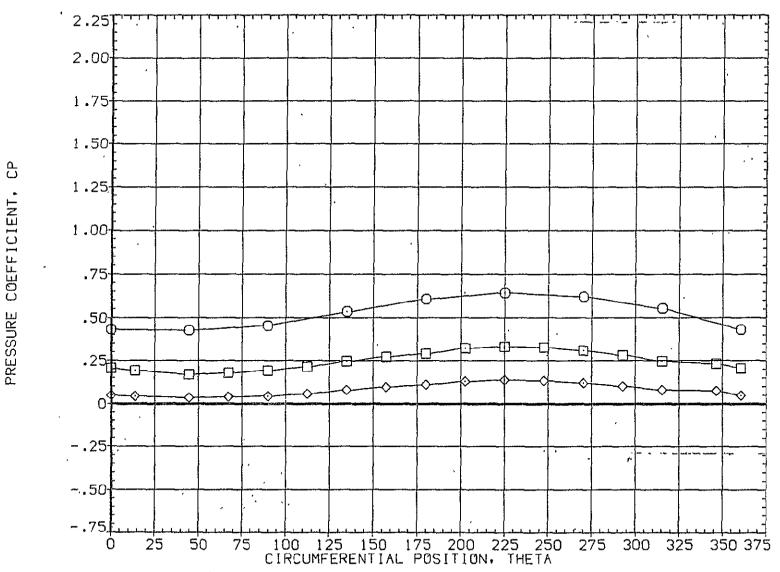


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1413

X/LB

ALPHA

MACH

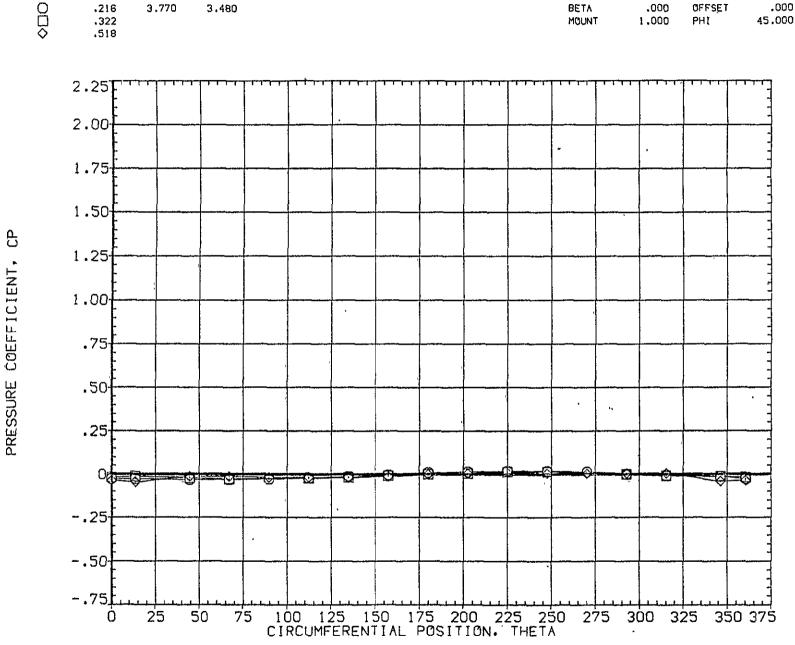


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1414



SYMBOL O O O	X/LB . 610 .735 .860	ALPHA 3.770	MACH 3.480							BETA		ARAMETR .000 1.000	IC VALUE OFFSET PHI	.000 45.000
•	2.25F	 	77777	, , , , , , , , , , , , , , , , , , , 		 	 	 	11111	11111	 	11111	 	~~~~
	2.00				<u> </u>			<u> </u>			·			
	1.75										<u> </u>			
	1.50										<u> </u>			
COEFFICIENT. CP	1.25									<u> </u>				
CIEN	1.00]				,		
OEFF]	.75					,								
JRE C	.50 [
PRESSURE	.25					<u></u>								
<u>a.</u>	0				0	6-	0	0	3 - 8	-8	- 0	·	Ċ.	
	25									<u></u>				
	50													
	75	25 5	50. 75	100 1 CIRCUM	25 11 EREN	50 1°	75 20 PØSIT) 00 22 10N•	25 25 THE T	50 2	75 3	00 3:	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1415

X/LB

ALPHA

MACH

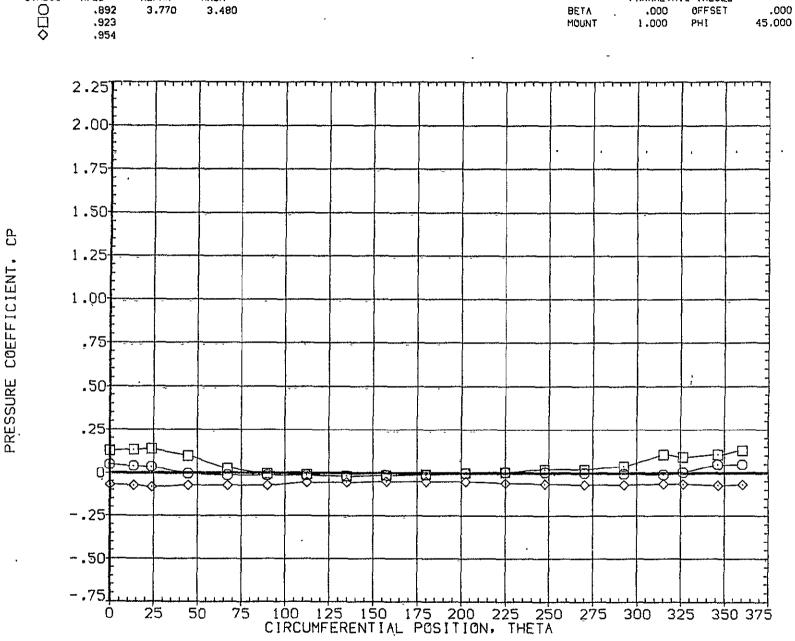


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1416

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1417

25

50

75

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION; THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1418

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

~.50

- .75

50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1419

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

~ .50

~ .75

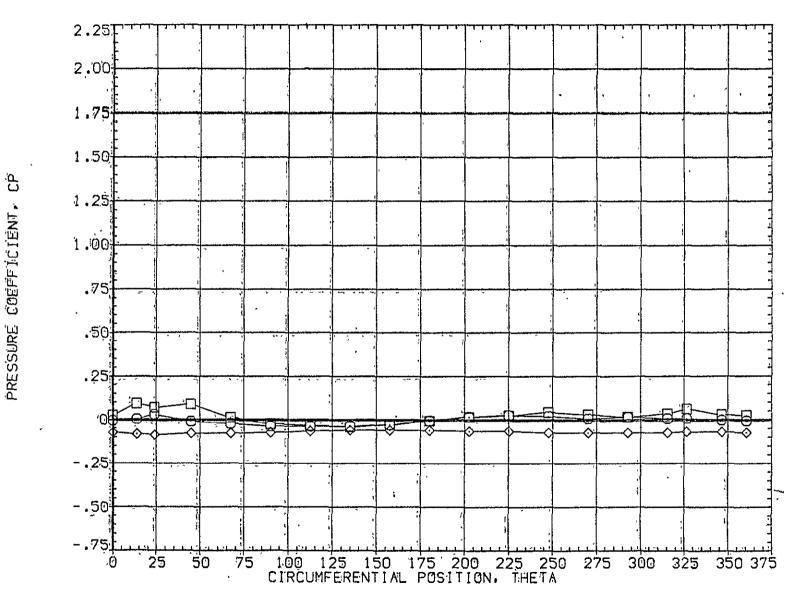


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - II WITH PROTUBERANCES
PAGE 1420

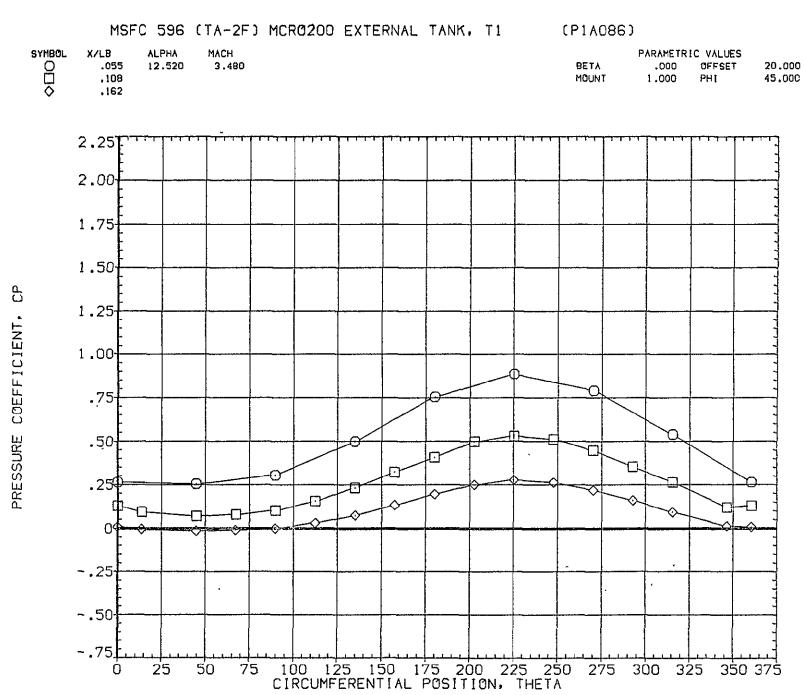


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1421

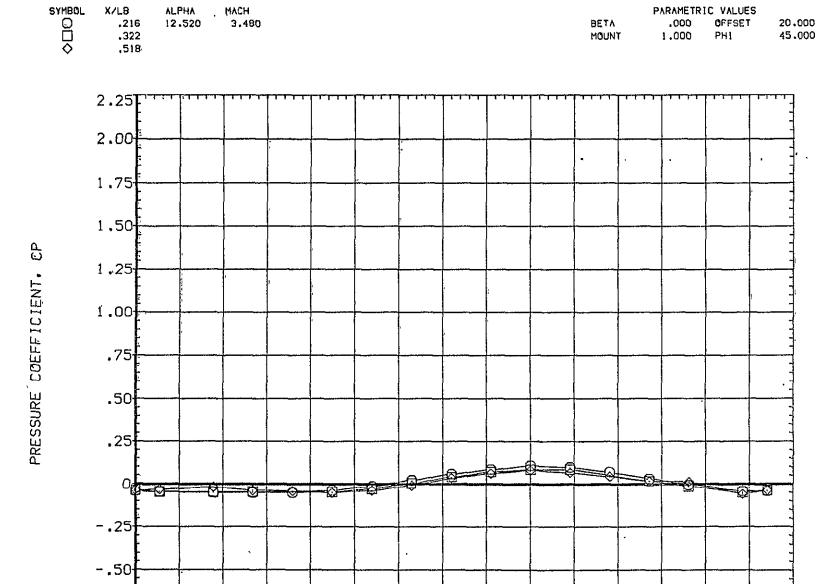


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1422

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

-,75

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FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1423

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ı	~	1	n	IJ	ಗ	n	J	

SYMBOL	X/LB	ΛĿΡΗλ	MACH	·			PARAMETRIC VALUES				
Q	.892	12.520	3,480			BETA	.000	OFFSET	20.000		
	.923					MOUNT	1.000	PHI	45.000		
\diamond	.954										

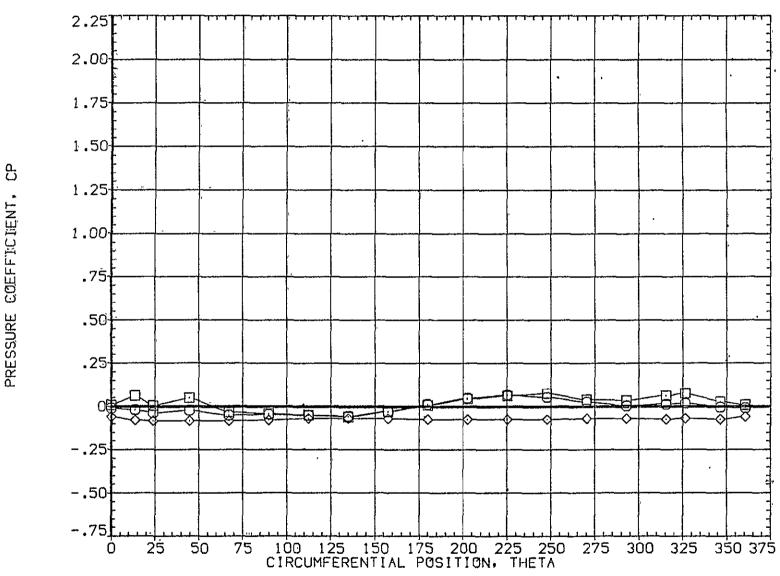


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1424

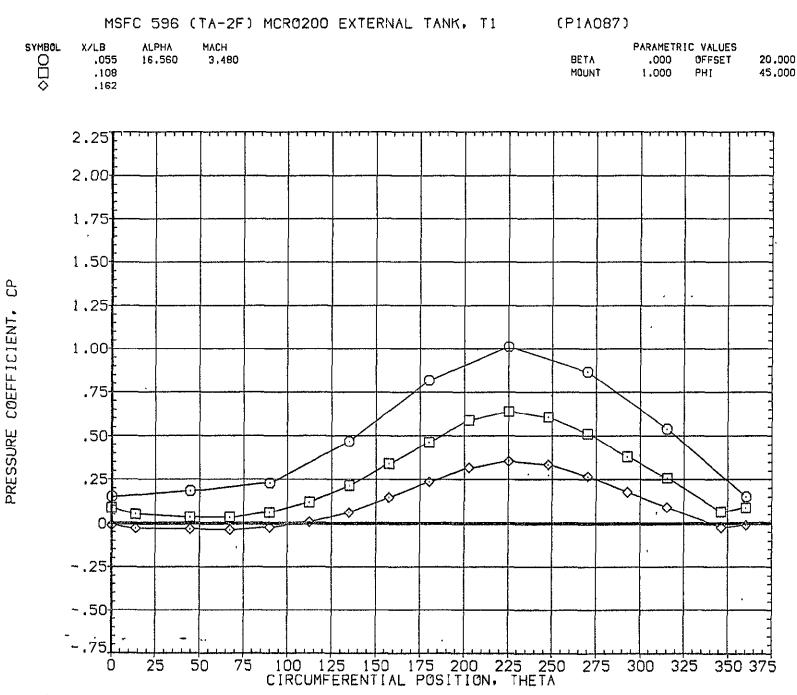
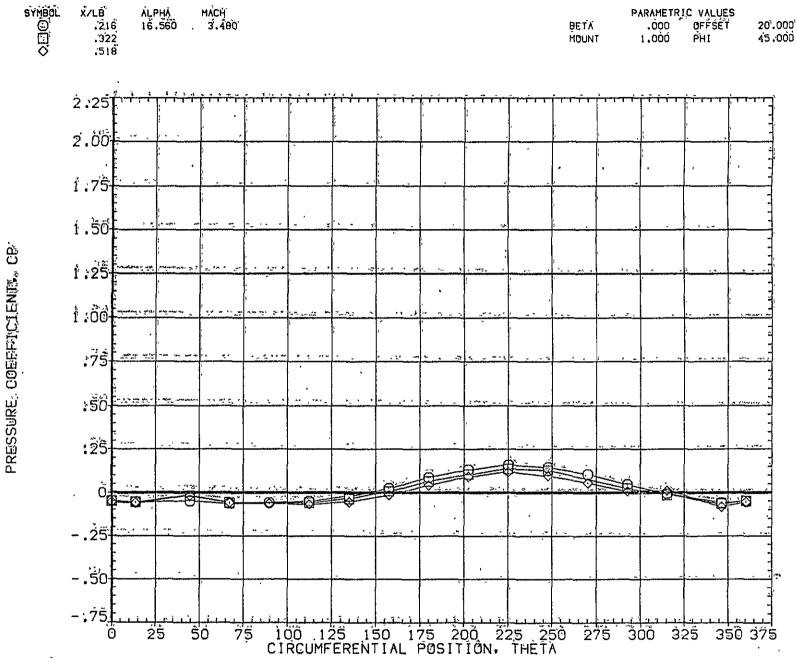


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



FÍG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ÉT - TI WITH PROTUBERANCES

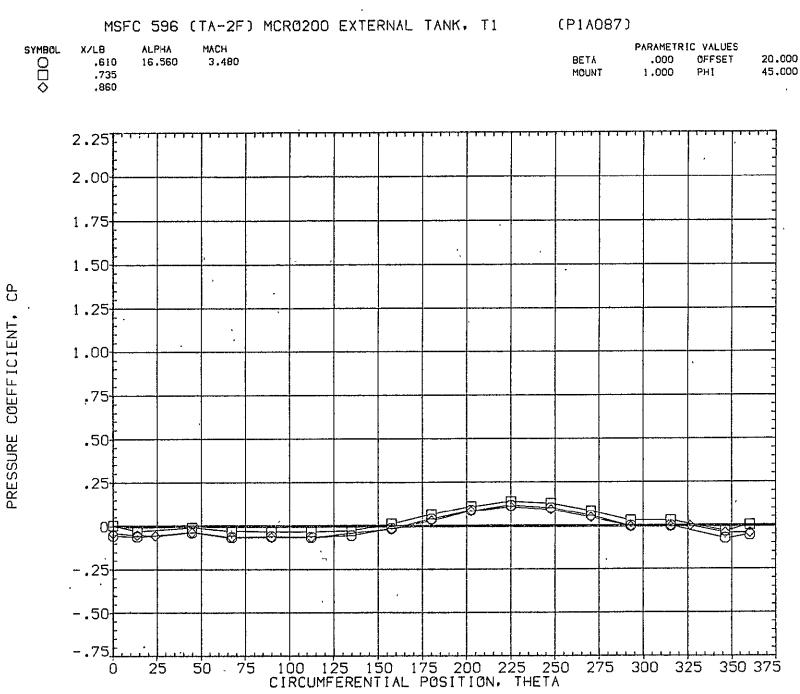


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

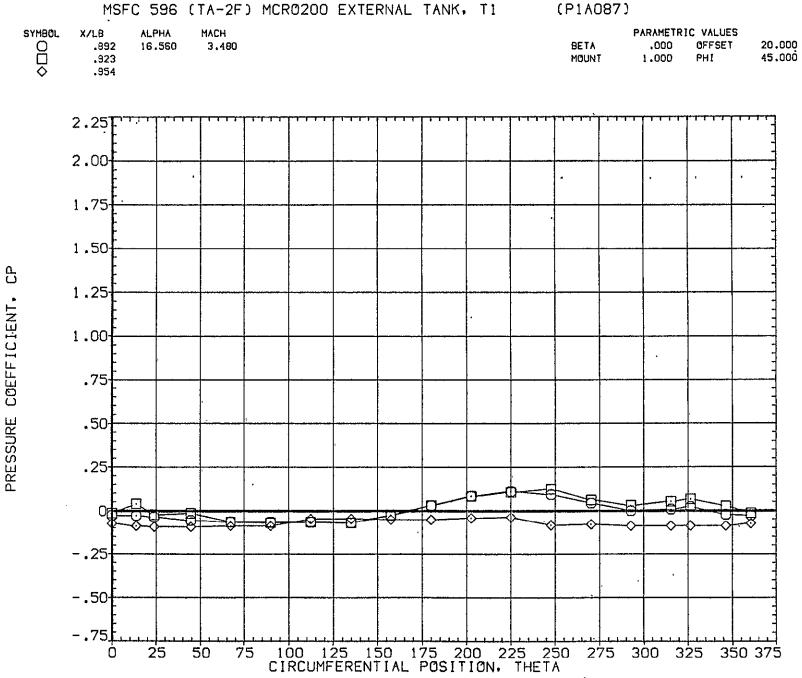


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1428

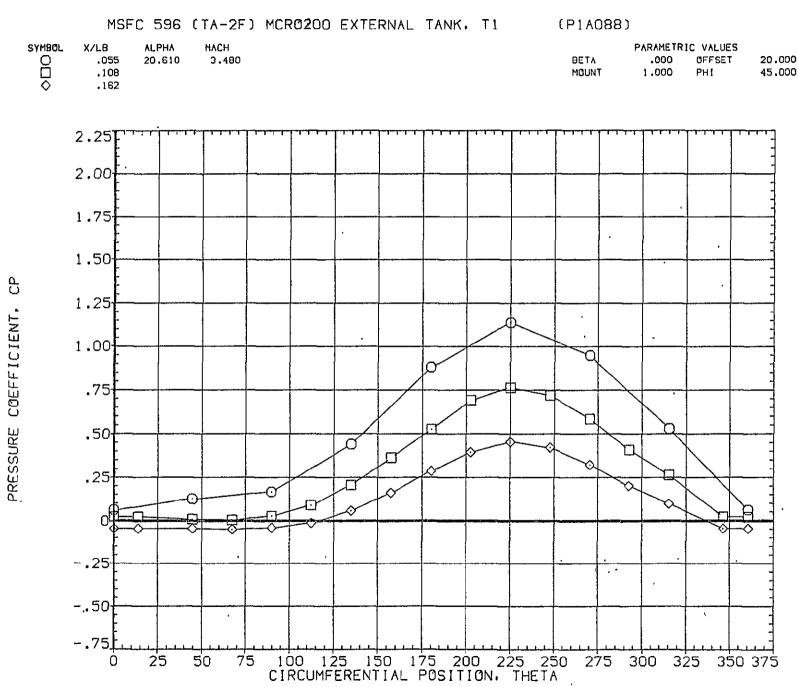


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1429

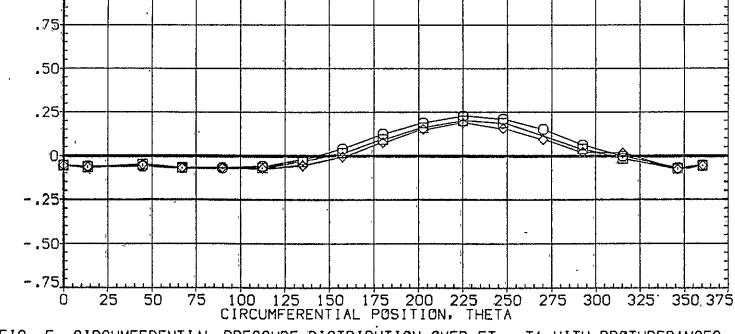


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1430

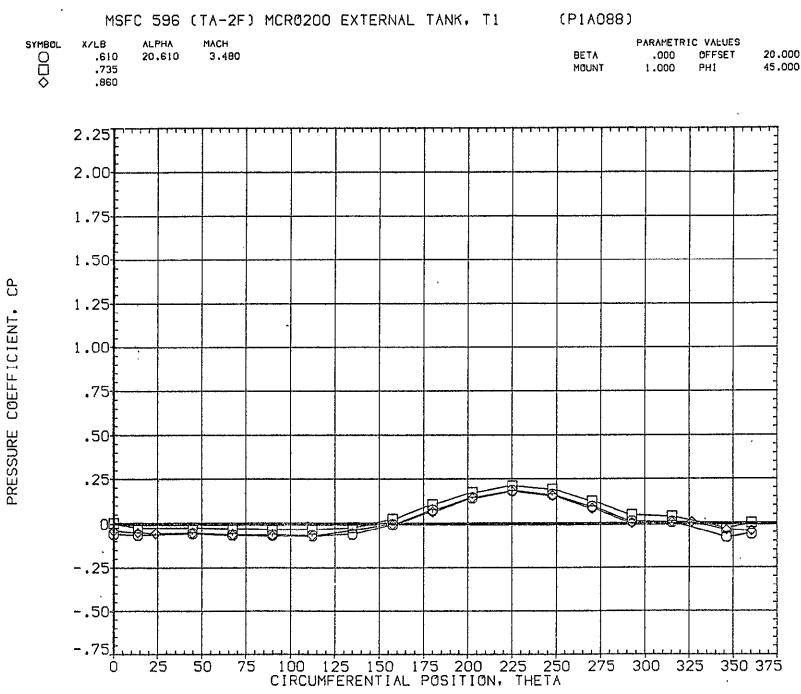


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

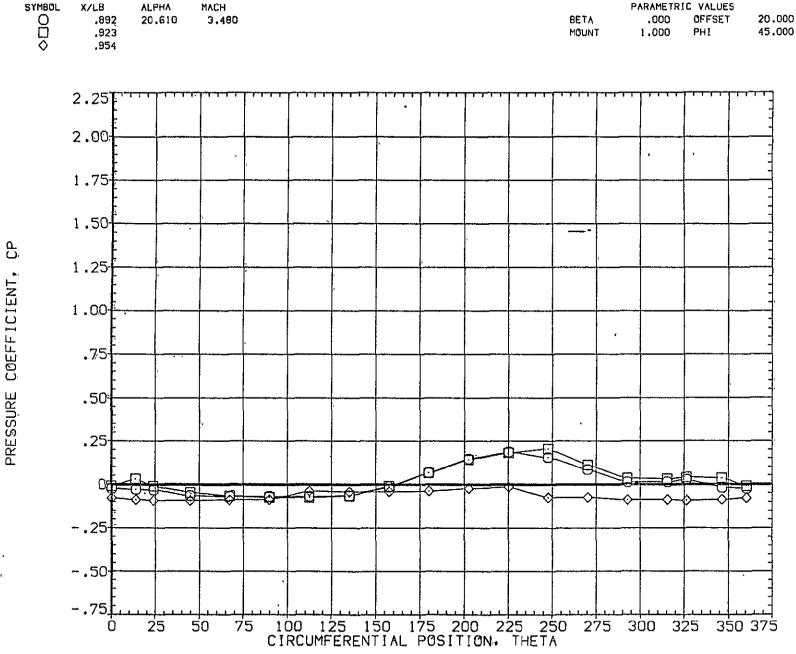


FIG. 5 · CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1432

	SYMBOL O O	X/LB .055 .108	ALPHA 24.66	MACI		R0200	EXTE	RNAL	TANK	T1		(PIAC BETA MOUN	P	ARAMETR ,000 1,000	IC VALUES OFFSET PHI	20.000 45.000
		2.25	- 	. Ť 17 1			 	1	 	 	, , , , ,	 	 	1111		
		2.00														
		1.75														
•		1.50	-													<u>-</u>
T, CP		1.25				 										
COEFFICIENT,		1.00							0		1	0	·			
OEFF		.75									7	17				
		.50					<u> </u>		口口	>	\searrow	8	TI.	2		
PRESSURE		.25		-				8	0				×			
<u>;</u>				-0	0		\ \frac{1}{2}						<u> </u>	*	8	0 -
		25														
		50														
		~, = -										1		i		_

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1433

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

300 325

X/LB

ALPHA

МАСН

(P1A089)

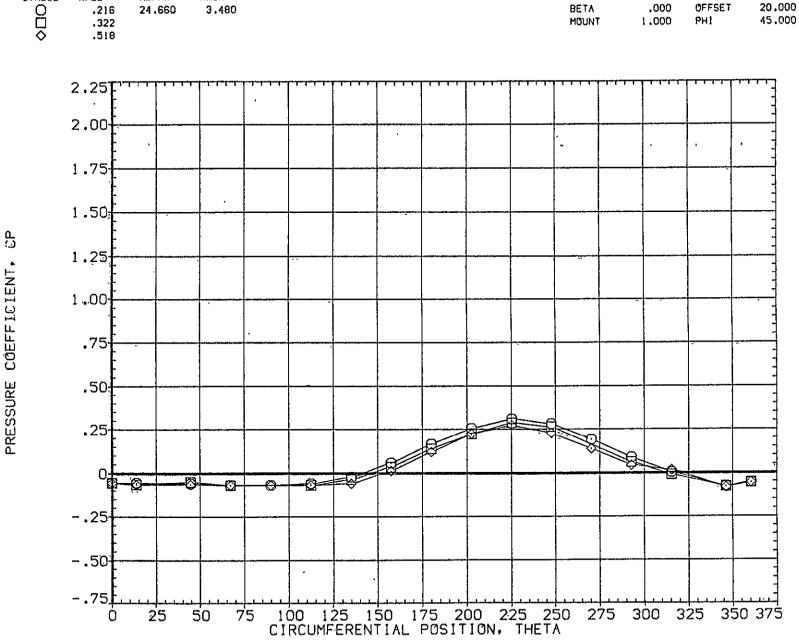


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1434

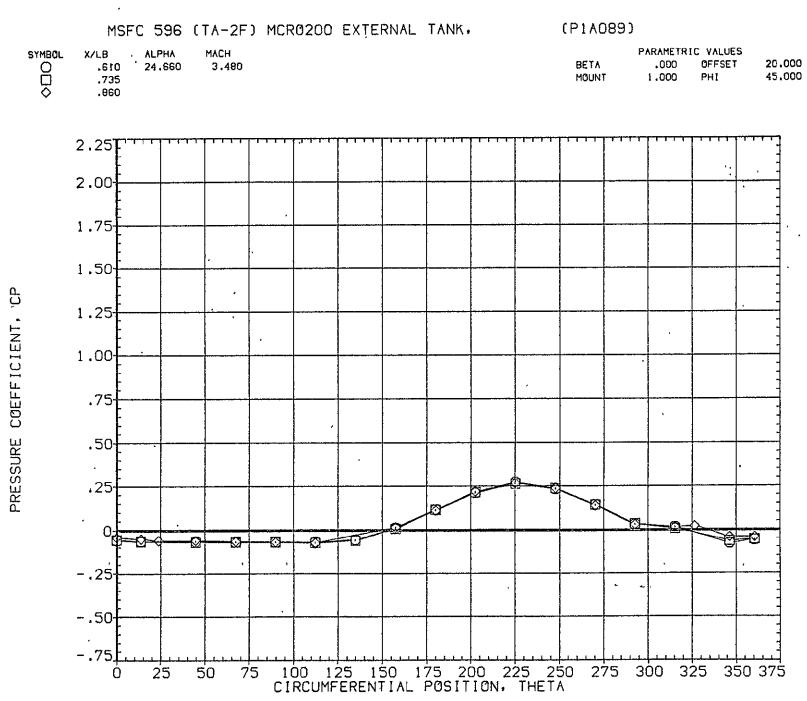
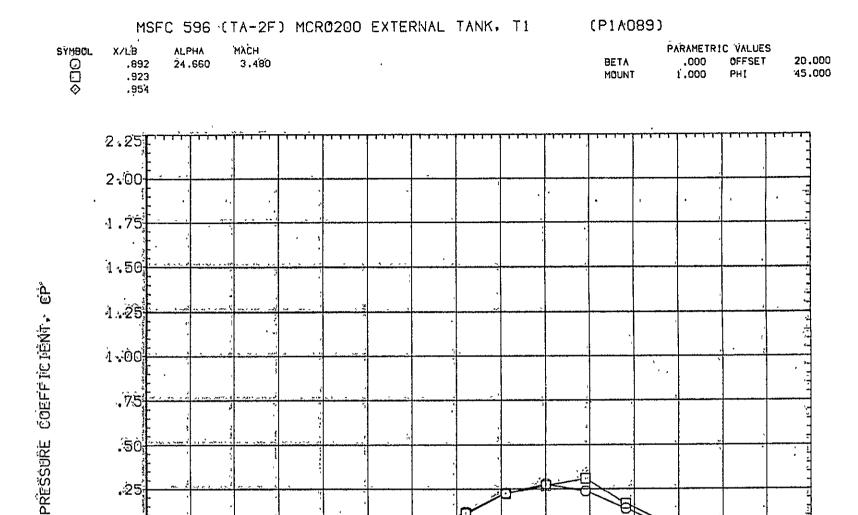


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1435



.25

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMPERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1,436

<u>, 0</u>

C. ~

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A090)

SYMBOL X/L8 **ALPHA** MACH PARAMETRIC VALUES 0□◊ 28.700 3,480 .055 .000 OFFSET 20.000 BETA ,108 45,000 MOUNT 1.000 .162 2.25] 2.00-1.75 1.50 S 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50-口 .25 -.25 - .50 -.75L 100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA 50 75 275 300 325 350 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1437

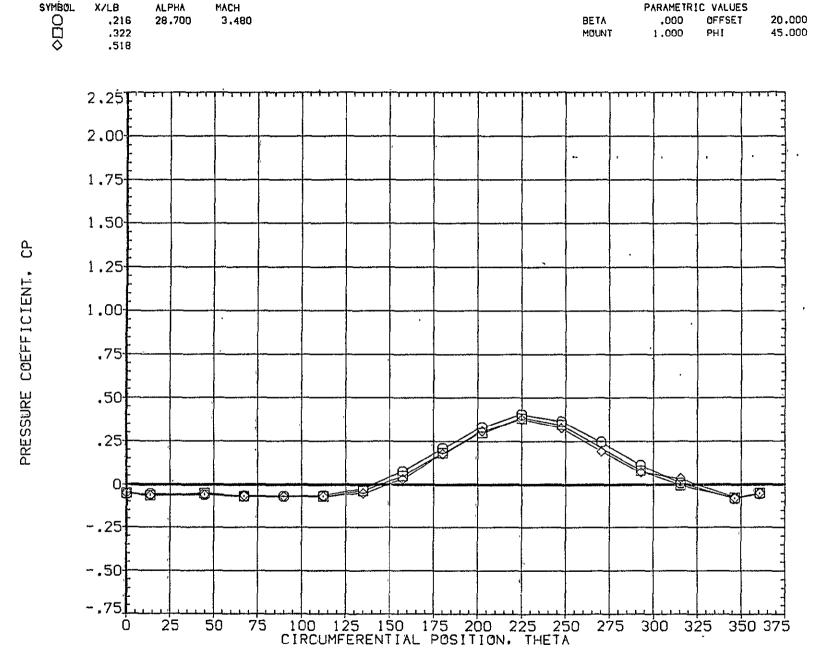


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1438

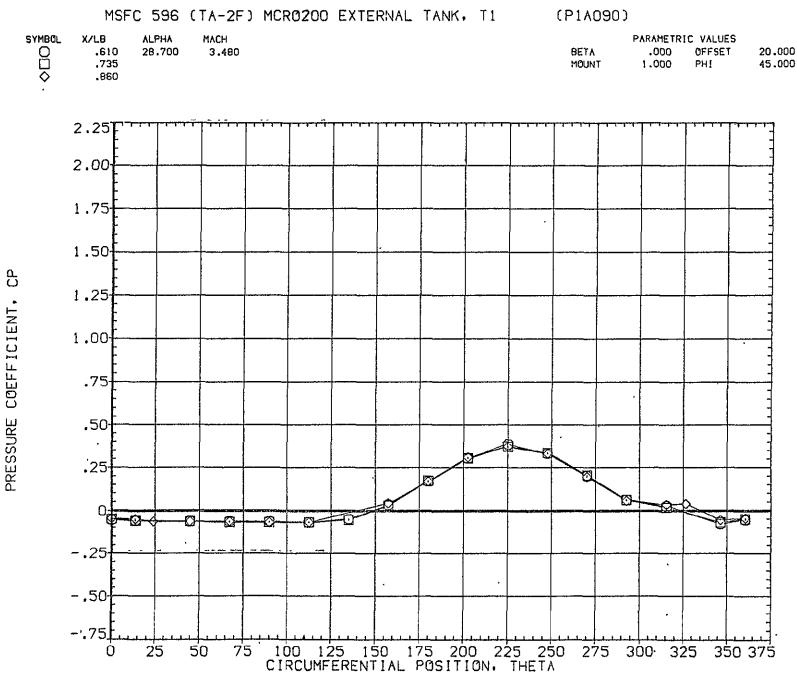


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1439

X/LB

ALPHA

MACH

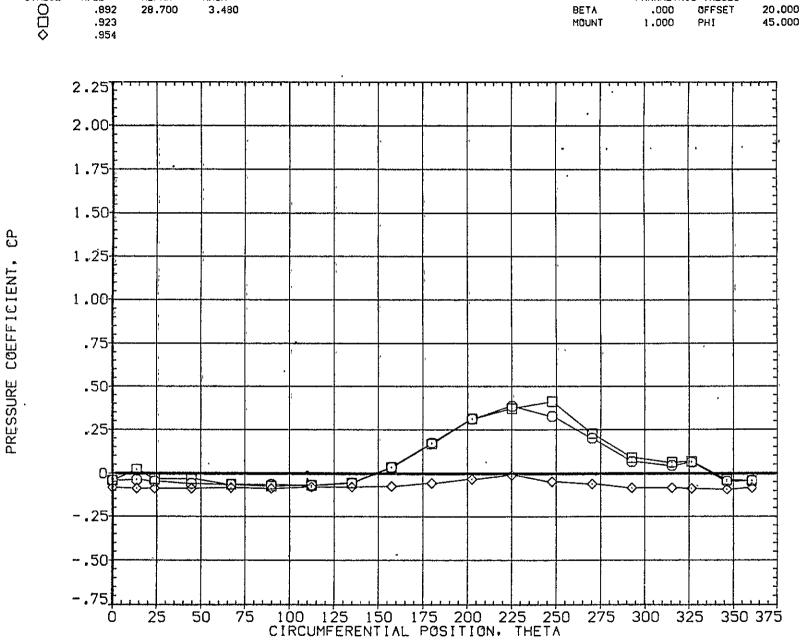


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1440

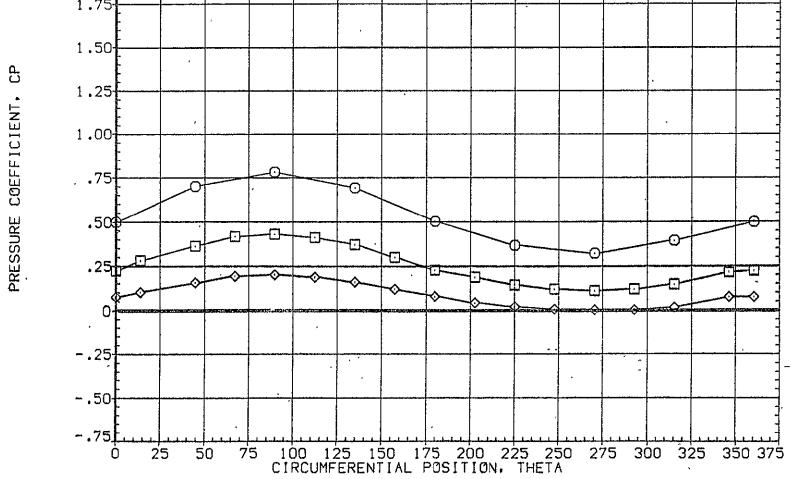
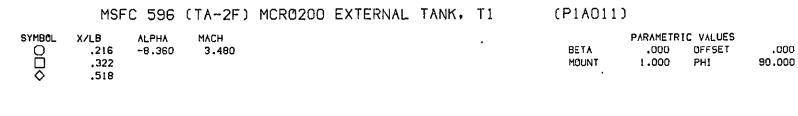


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1441



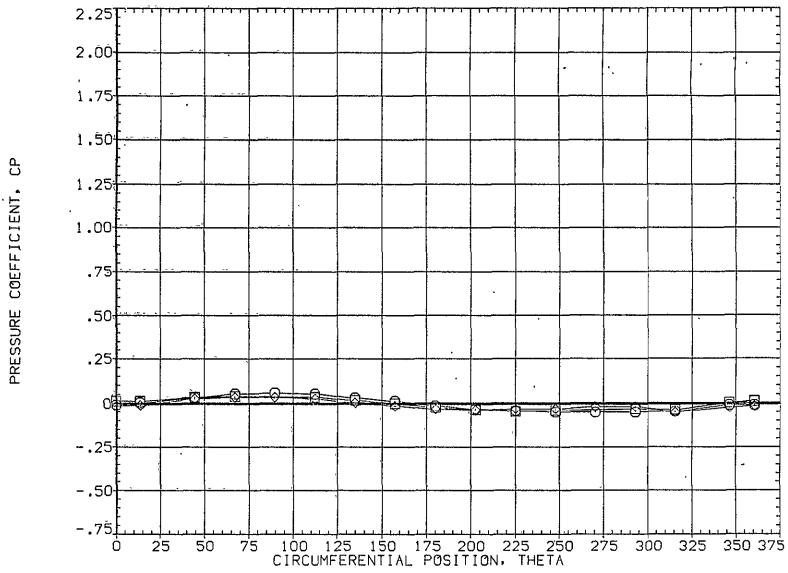


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1442

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1443

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75

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

MOEO	E00	474 053	MODOGO		*** * * * * *		
MSFU	226	ししカーストリ	MCR0200	EXTERNAL	TANK.	11	

1	٢	P	1	A	n	1	1)
	L	-	1	n	u	1	1	,

	, MS	SFC 596	CTA-2F)	MCR0200	EXTE	RNAL	TANK	T1		(PIA	0110			
SYMBOL O O O	X/LB .892 .923 .954		MACH 3.480							BETA MOUN		ARAMETR .000 1.000	IC VALUES OFFSET PHI	.000 000.0e
	2.25	, , , , , , , , , , , , , , , , , , , 	· · · · · · · · ·		, , , , , , , , , , , , , , , , , , , 		, , , , ,	7131	, , , , ,	, , , , , , , , , , , , , , , , , , , 	, , , , ,	 	, , , , , , ,	
	2.00									•				
	1.75												,	
_	1.50					•	,							
<u>.</u>	1.25													
FENT.	1.00	-							,					

PRESSURE COEFFICE .75 .5Ò .25 -.25 --.5Ò-

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1444

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

-.75 Ō

25

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FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1445

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

275 300 325

350 375

-.50

-.75

50

PARAMETRIC VALUES

X/L8

ALPHA

MACH

SYMBOL

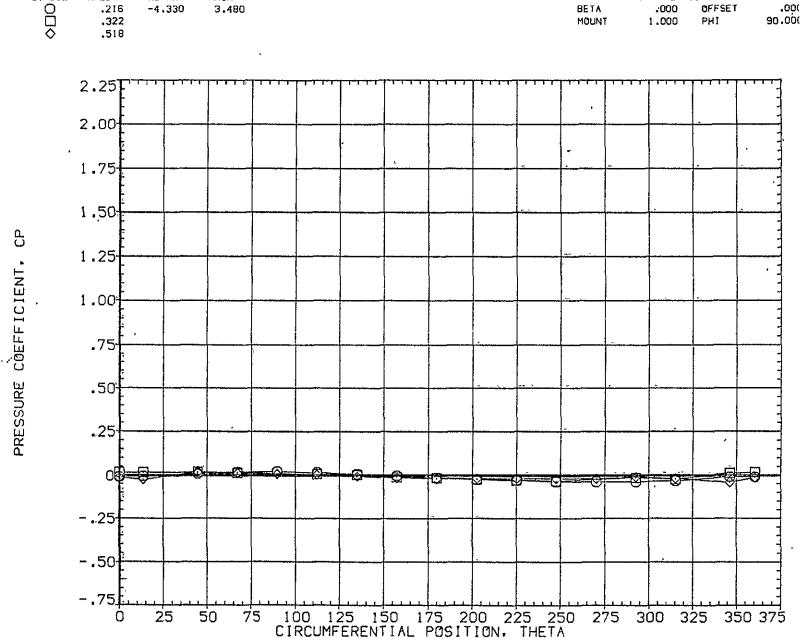


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1446

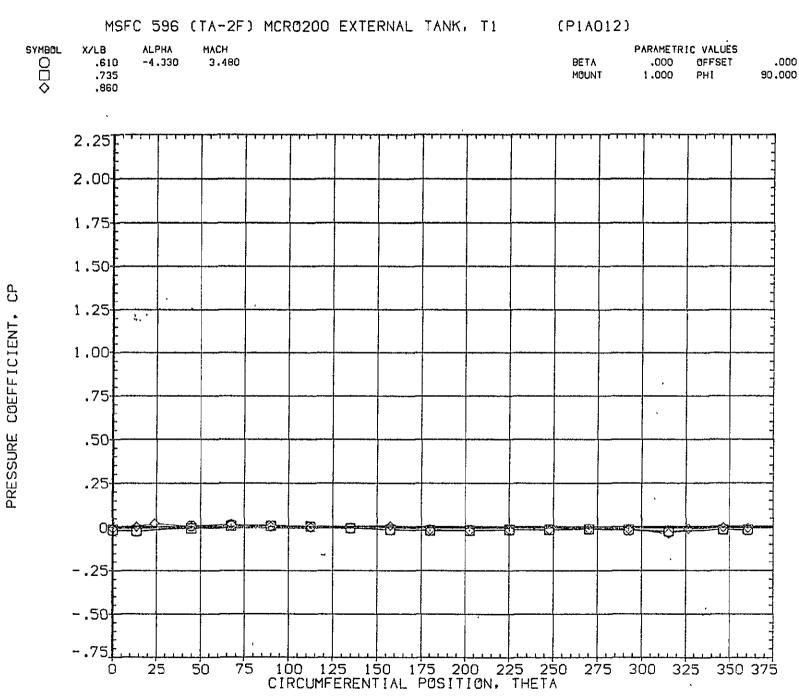


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES



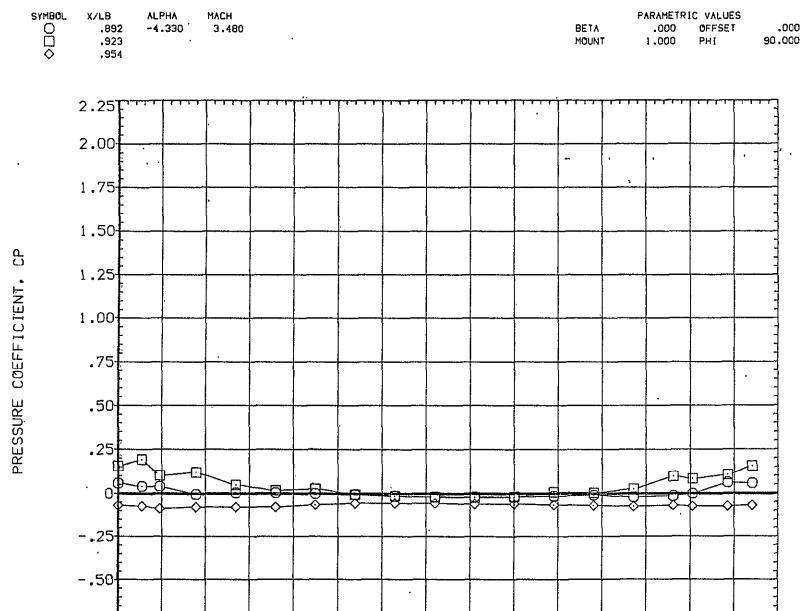


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1448

CIRCUMFERENTIAL POSITION. THETA

100 125 150 175 200 225 250 275 300 325 350 375

50

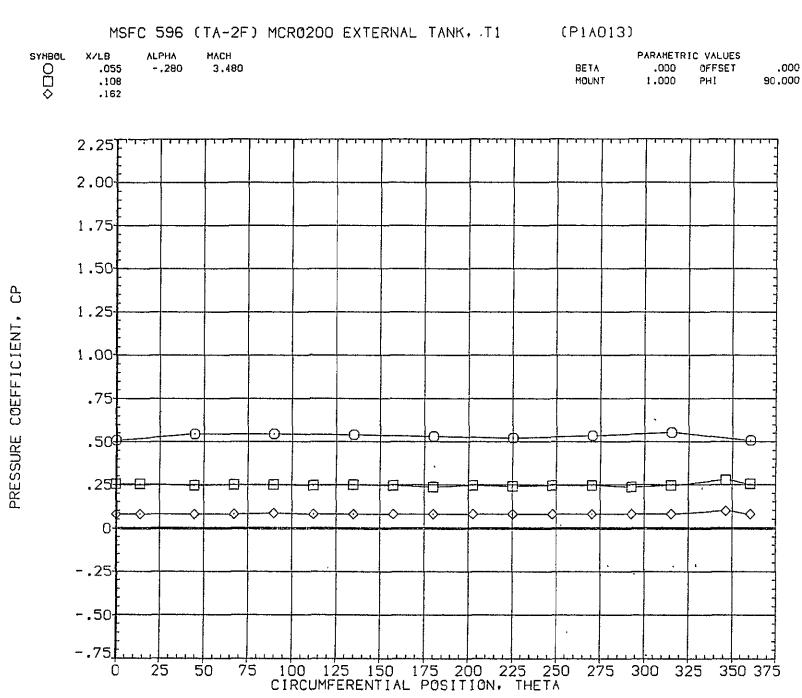


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1449



X/LB

ALPHA

MACH

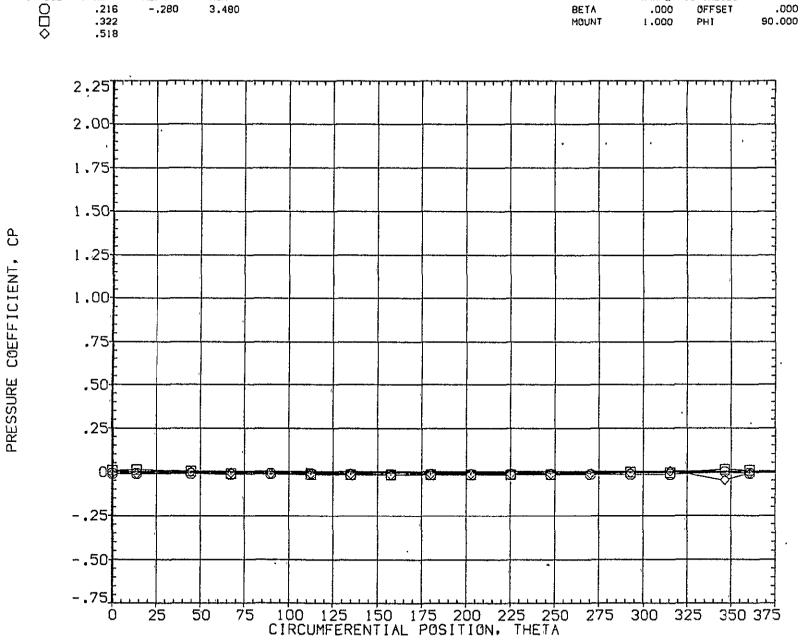


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1450

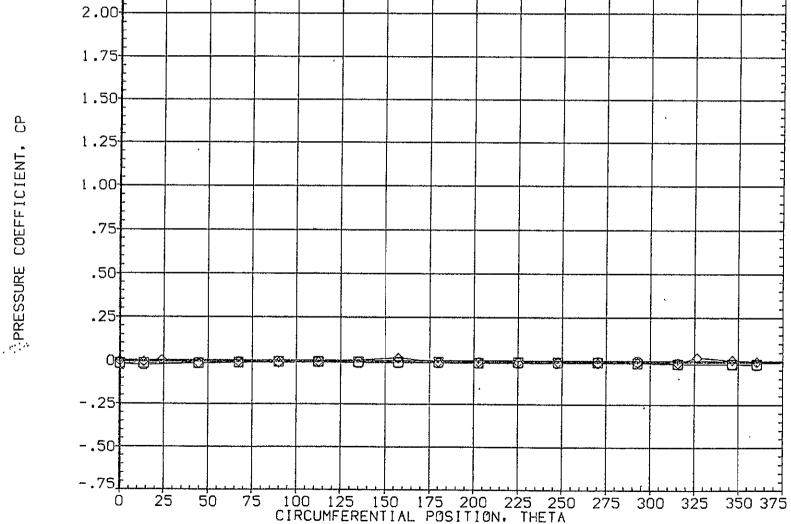


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1451





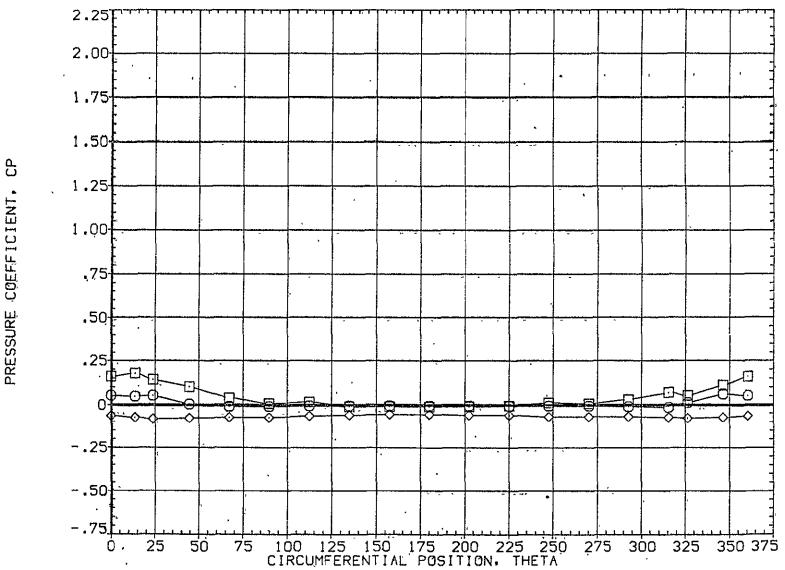


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1452

MSFC '	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T1	(P1AO14)

SYMBOL	X/LB	ALPHA	MACH	PA	RAMETR	IC VALUES	
0	.055	3.770	3.480	BETA	.000	OFFSET	.000
	.108			MOUNT 1	.000	PHI	90.000
\Diamond	.162			•			

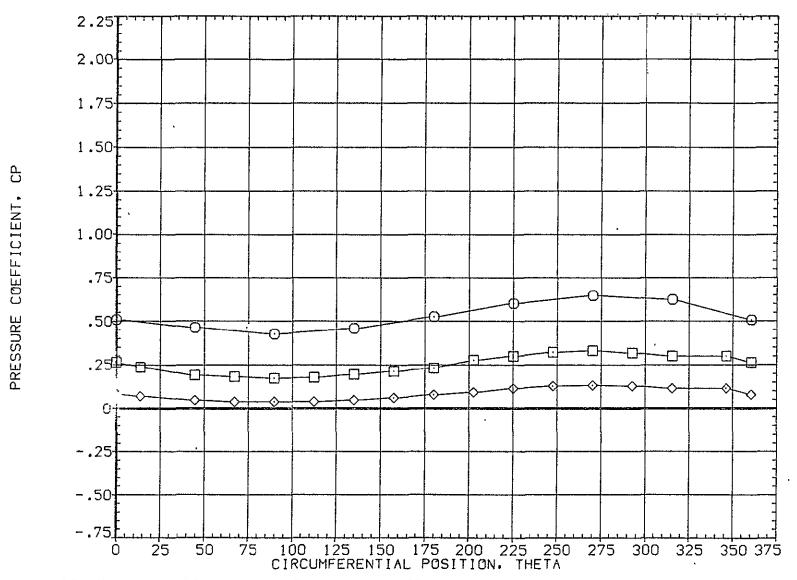


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1453



PARAMETRIC VALUES

SYMBOL

X/LB

ALPHA

MACH

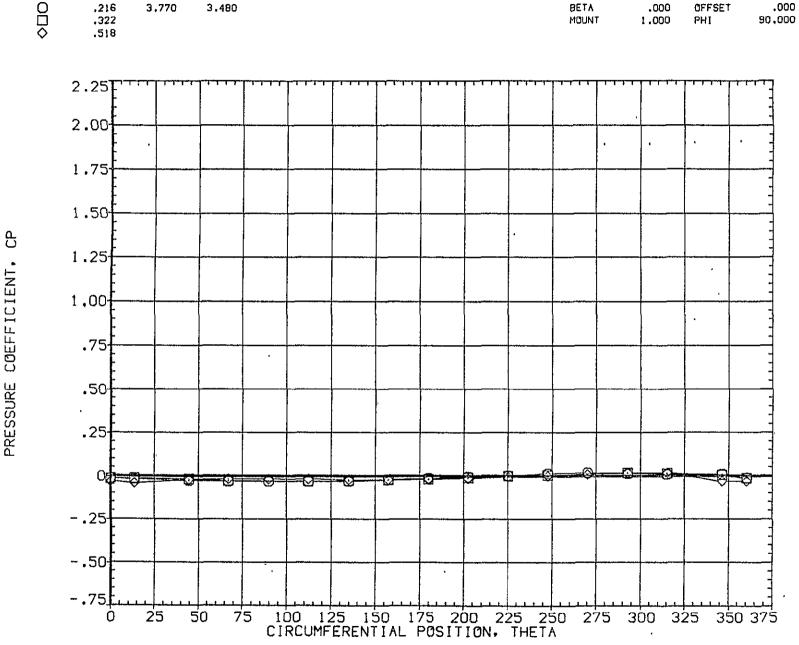


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - 11 WITH PROTUBERANCES
PAGE 1454

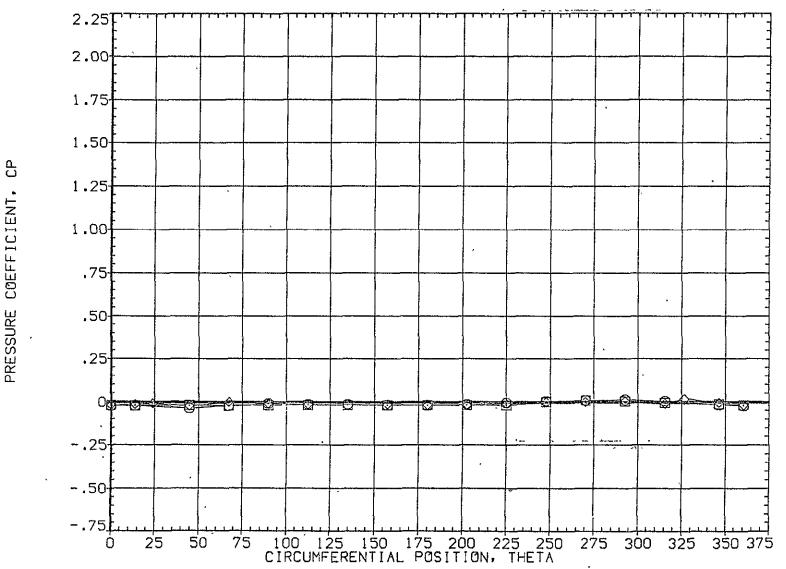


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1455

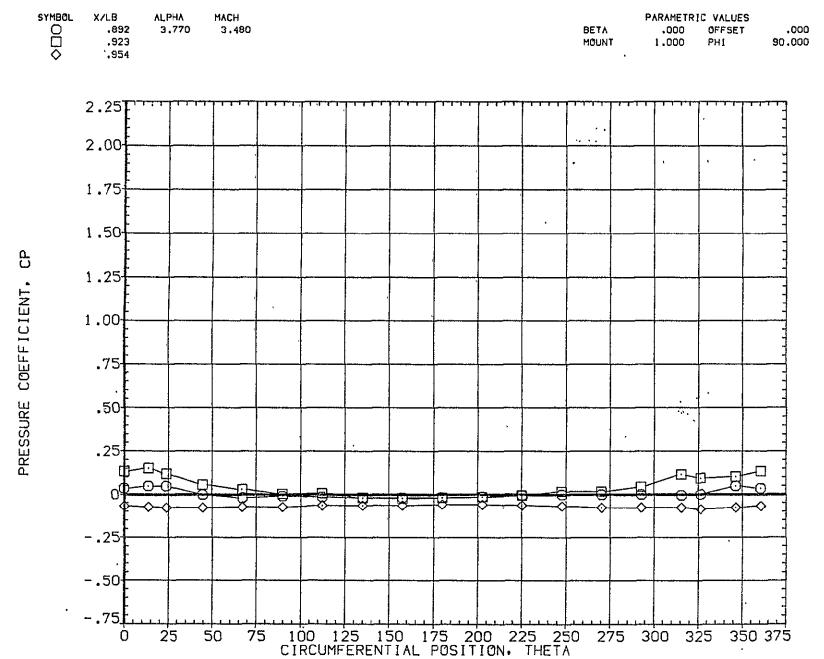


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1456

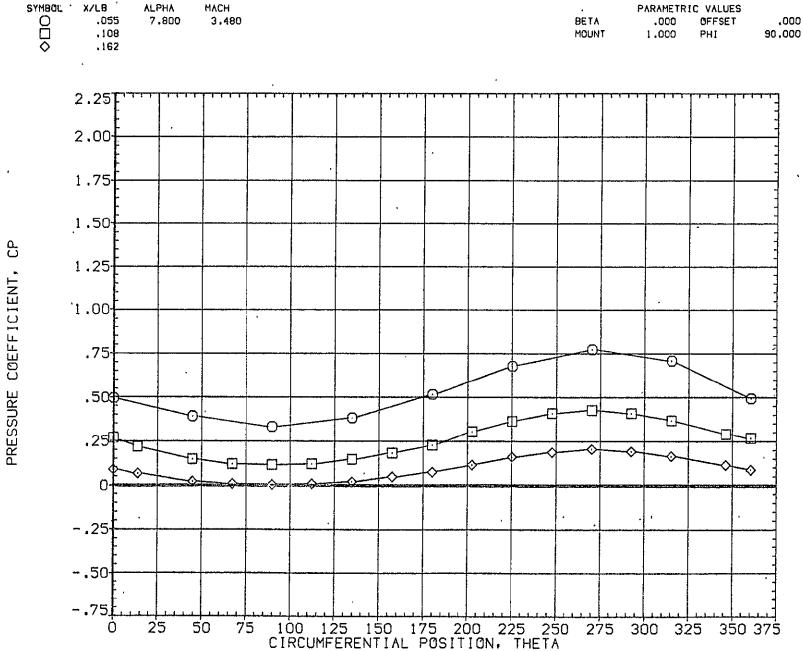


FIG. 5 CIRCUMFERENTIAL PRÉSSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

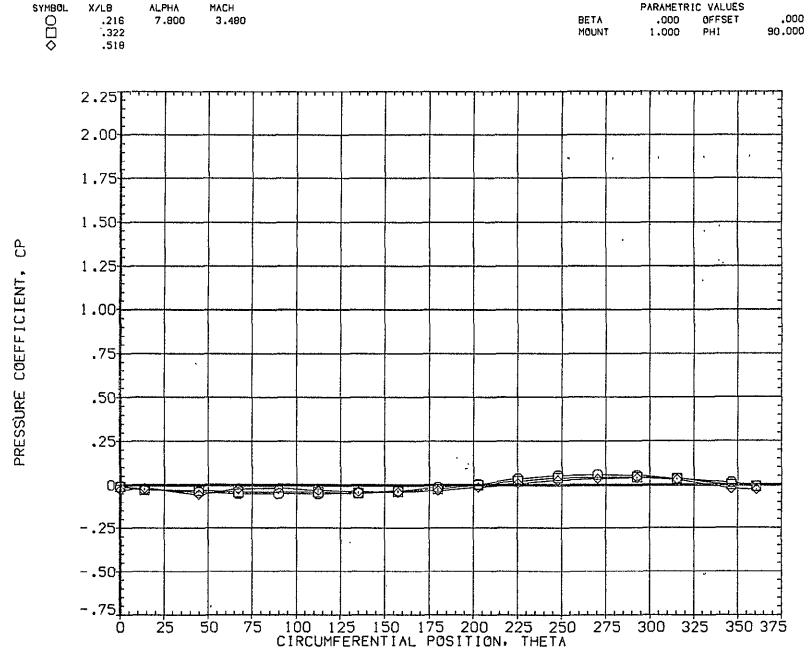


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1458

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1459

X/LB

ALPHA

MACH

PARAMETRIC VALUES

\$.892 .923 .954	7.800	млсн 3.480							BETA MOUN		.000 1.000	OFFSET PHI	.00.00
	2.25	 			, , , , , , , , , , , , , , , , , , , 		1	1111	 	1111	, , , ,	,,,,		
	2.00													
	1.75									-				
n	1.50													
<u>.</u> =	1.25													
I C I E N	1.00							<u> </u>						
rkessoke Cuerficieni,	.75													
ا ا	.50		,											
NE 33	.25				-									
l					8 6		 			D		0		
	25													
	50													
	75 0	25 5	50 75	100	125	150 1 ENTIAL	75 2	00 2	25 25	50 2°	75 3	00 3	25 35	30 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1460

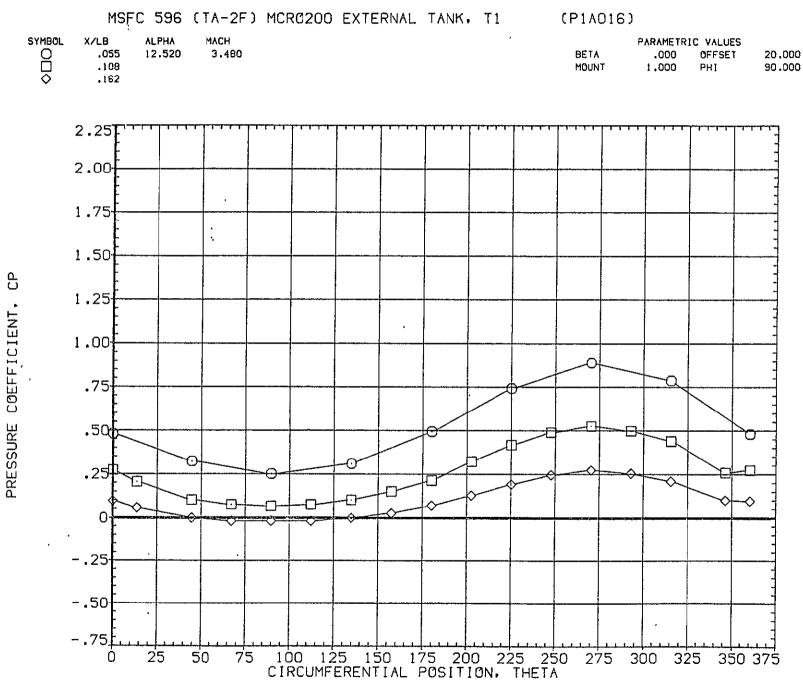


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1461

.518

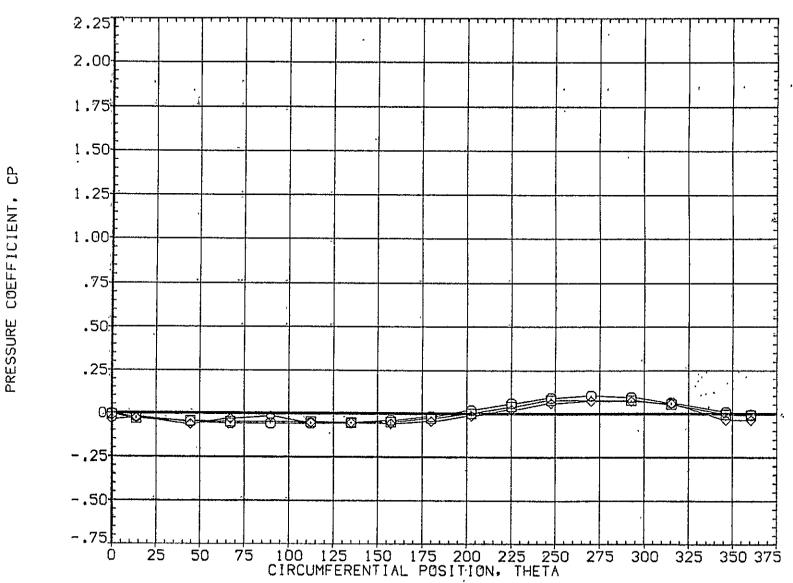


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1462

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.75L

50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1464

CIRCUMFERENTIAL POSITION. THETA

100 125 150 175 200 225 250 275 300 325 350 375

- .75

SYMBÖL	X/LB .055 .108 .162	ALPHA 16.560	MACH 3.480								BETA MOUN		O00 1.000	IC VALUE OFFSE PHI	20.00 90.00
	~2.25]	, , , , , , , , , , , , , , , , , , , 	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				, , , , , , , , , , , , , , , , , , , 			 	, , , , , ,	 	-,	 	, , , , , , , , , , , , , , , , , , ,
	2.00	•													
	1.75														
	1.50														-
ı	1.25						ļ								
	1.00														
	.75												2		
	.50							0				7	-		
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	25										-				
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	75 0	25	50 75	5 1 CI	00 12 RCUMF	25 15 ERENT	50 17	75 20 20SIT	00 22 10N	25 25 THE TA	50 27	75 3t	00 32	25 35	50 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1465

X/LB

.216

ALPHA

16.560

MACH

3.480

•	Ρ	1 .	8 1	\sim	1	7	٦
L		1/	יער	U.	1	/	J

BETA

PARAMETRIC VALUES

OFFSET

20.000

.000

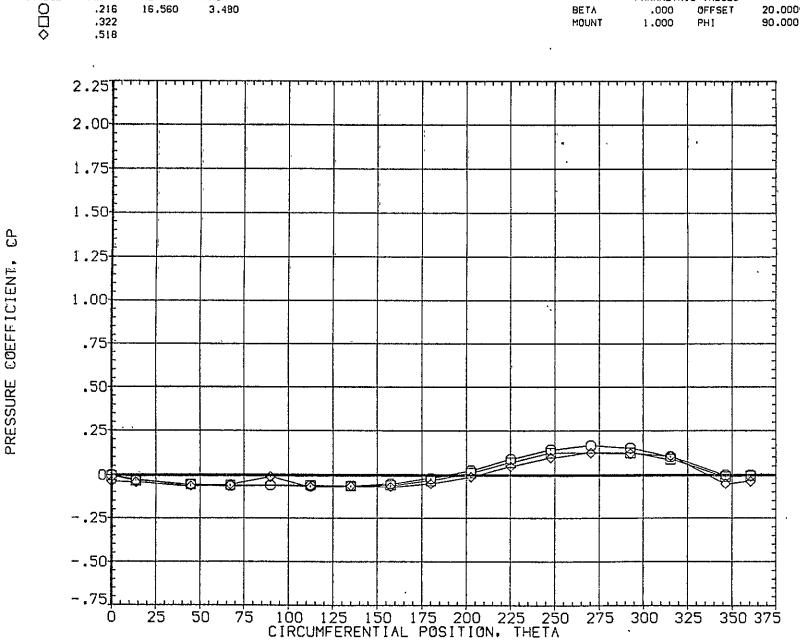


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1466

MSEC	596	(TA-2F)	MCRB2DD	EXTERNAL	TANK.	T 1
11316	330	しまれでストラ	TIGIOLOU		I AINIX *	1 1

X/LB

ALPHA

(P1A017)

) }	.610	3	6.560	3	.480								HOUN	١	,000 1,000	OFFSET PHI	9
>	.860)															
2	2.25]	- - 	7		7 1 1	-, , , , ,		7,,,,,				111,11		 	- - - - - - - - - - 	1	
2	2 .00	- - -					 	-									•
1	.75	- - -				·····	-	 								1	
1	.50	- -															
1	.25	• •		<u> </u>		· · •	-										
1	.00.	- -				<u>, ., ., ., .,</u>											<u>, </u>
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_	.50																
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FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1467

X/LB

ALRHA

(P1A017)

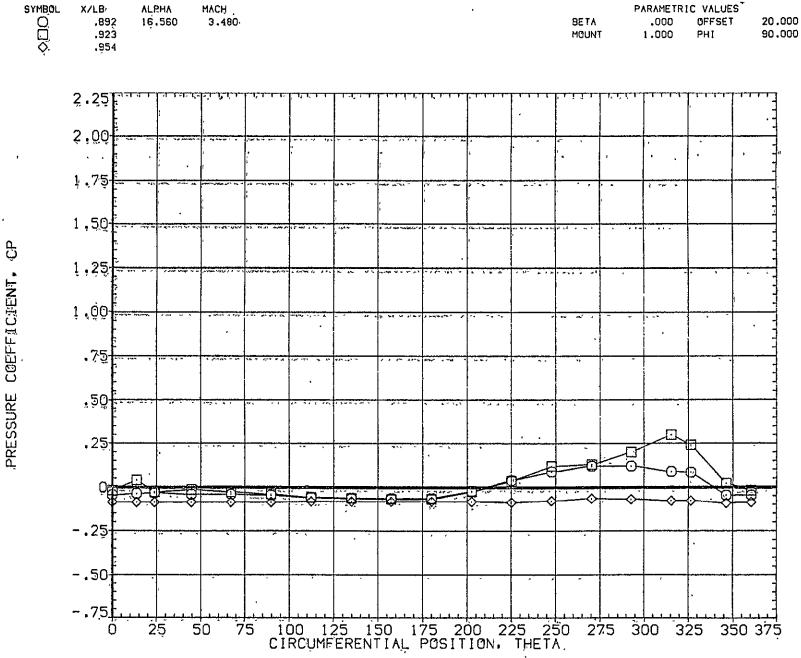


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1468

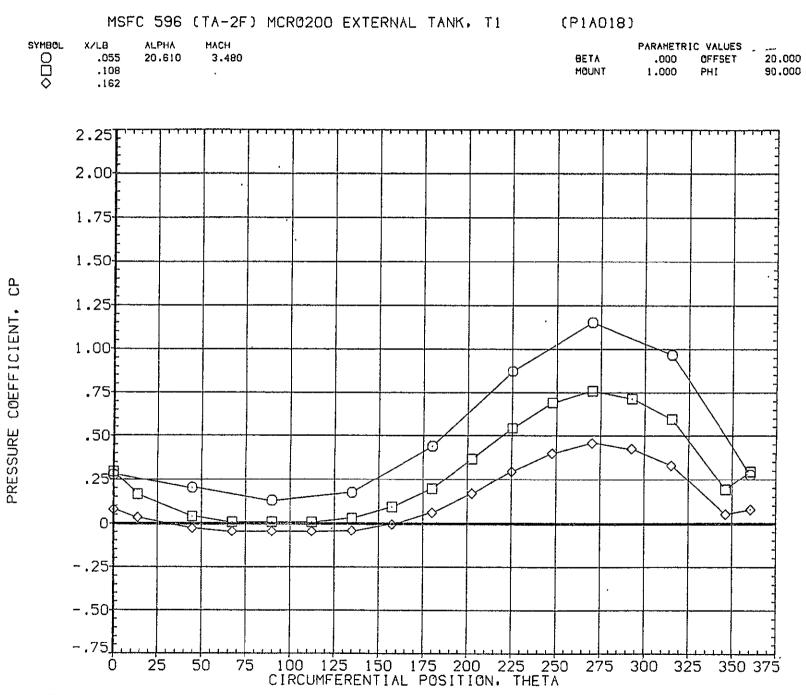


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PARAMETRIC VALUES

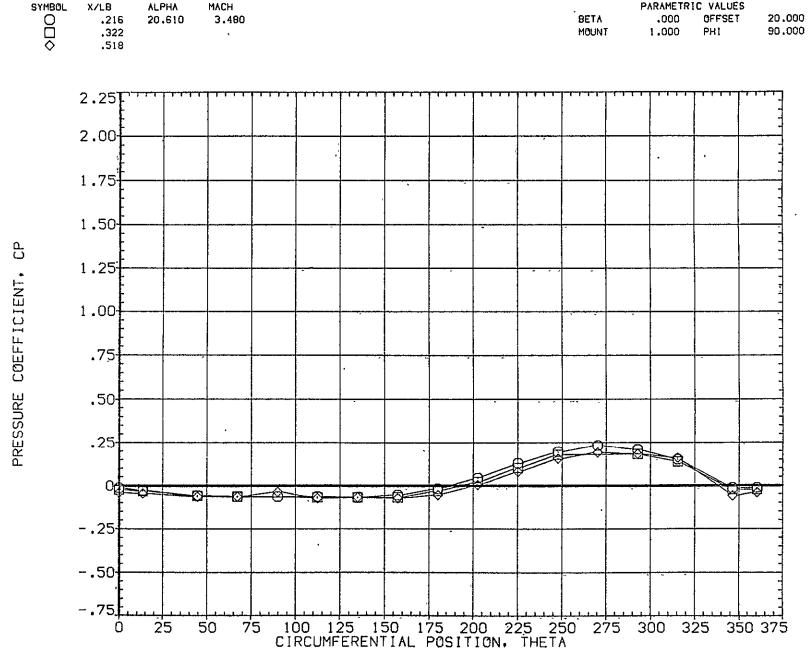


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1470

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1471

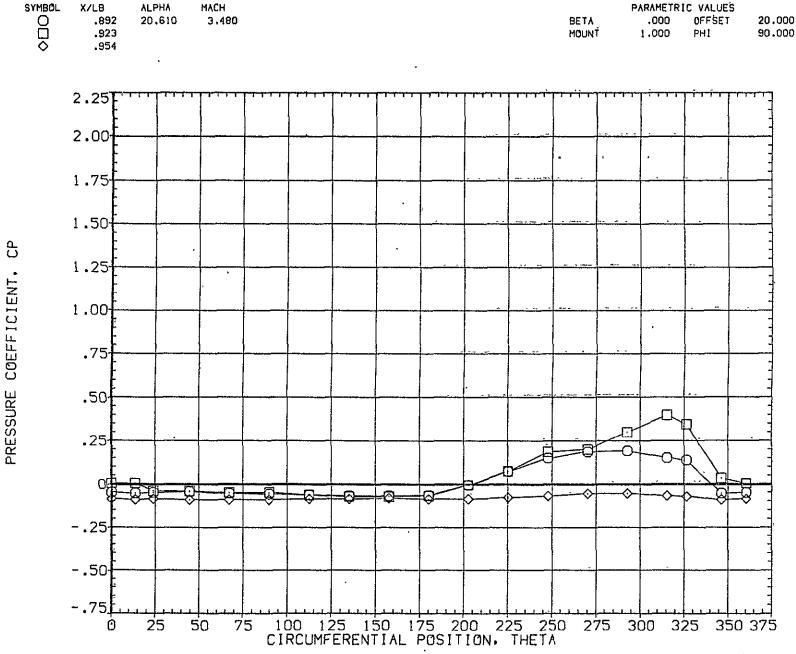


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1472

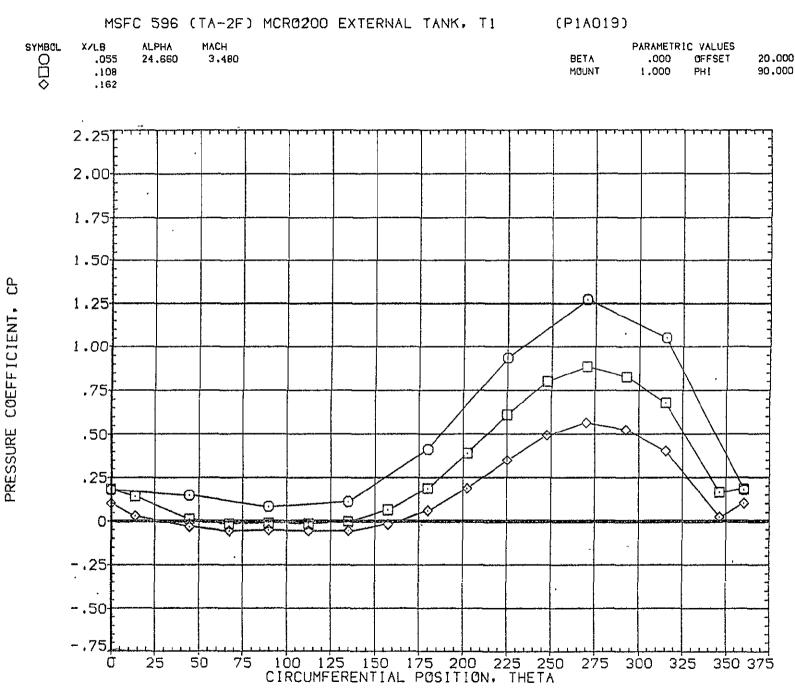


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

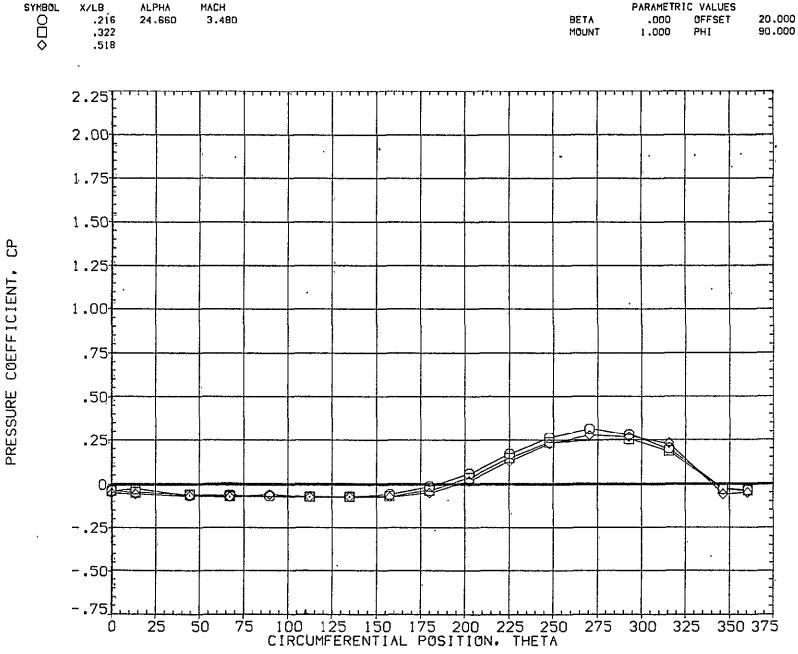


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1474

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

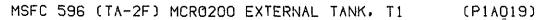
50

*7*5

100 125 150 175 200 225 250

CIRCUMFERENTIAL POSITION, THETA

275 300 325 350 375





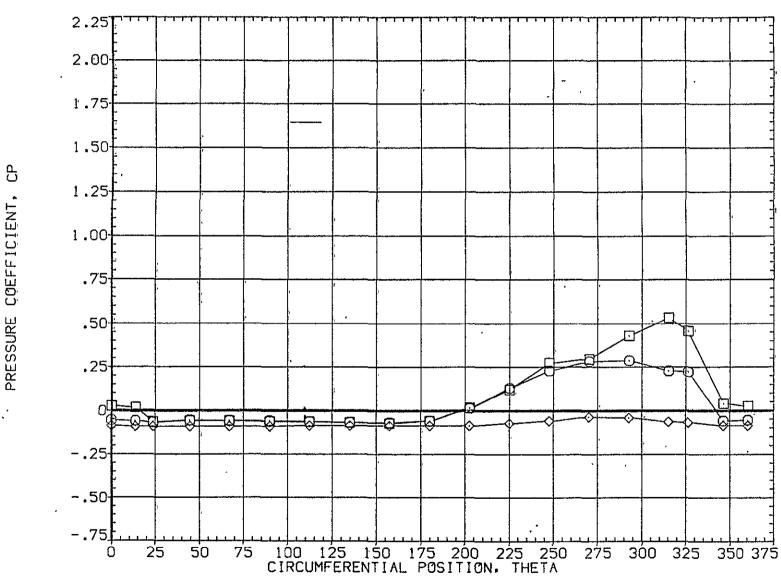


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1476



SYMBOL O O O	X/LB .055 .108 .162		MACH 3.480							BETA MOUN		ARAMETR .000 1.000	IC VALUE OFFSET PHI	
	2.25	· • • • • • • • • • • • • • • • • • • •					 	, , , , , , , , , , , , , , , , , , , 	 	, , , , , ,	 	 		
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v	1.75								i			,		
	1.50													
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•	75E	25	50 75	100 CIRCU	125 1 MFEREN	50 1°	75 20 PØSIT	00 22 10N:	25 25 THETA	 50 27 \	75 31	00 32	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1477

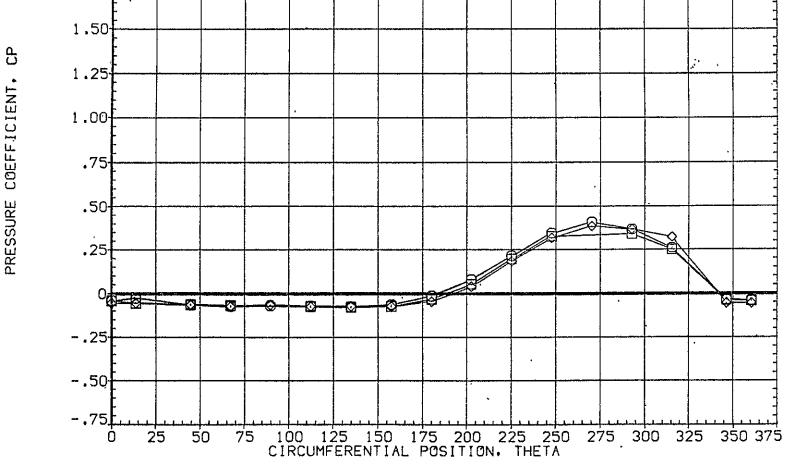


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1478

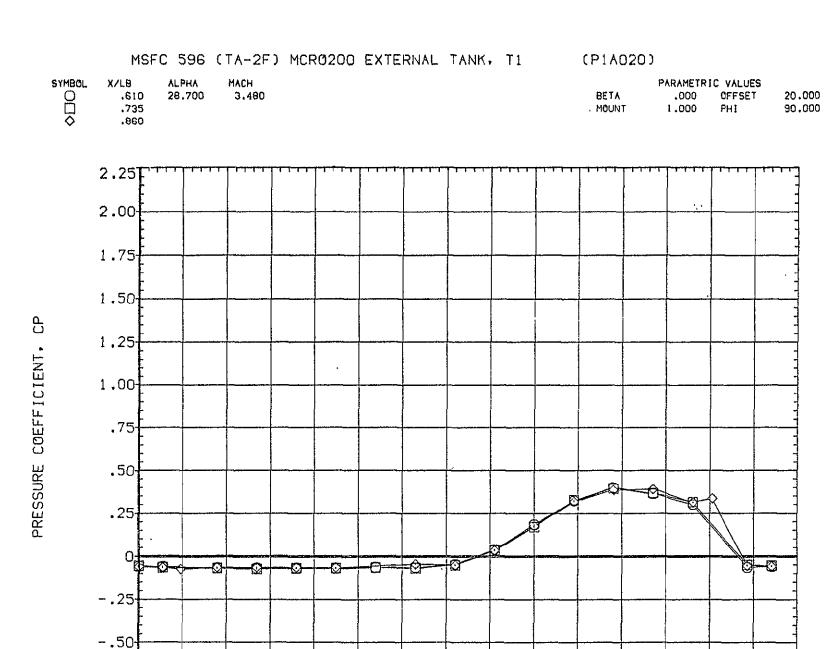


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1479

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

-.75

50

75

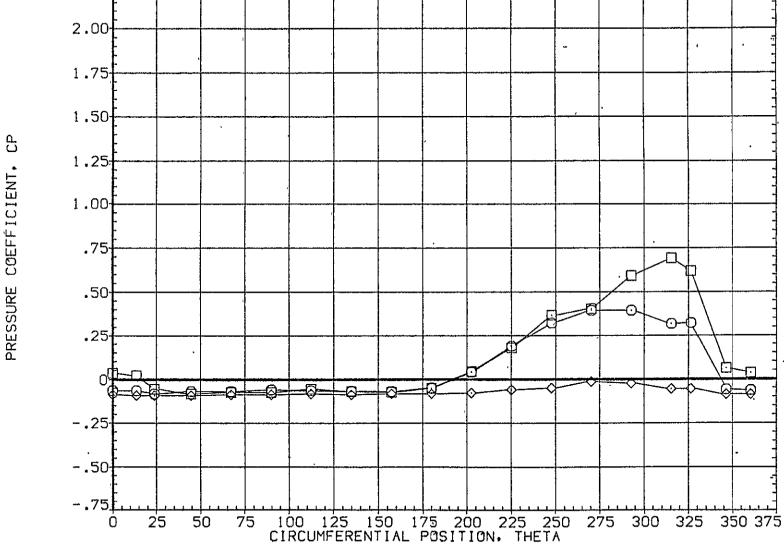


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1480

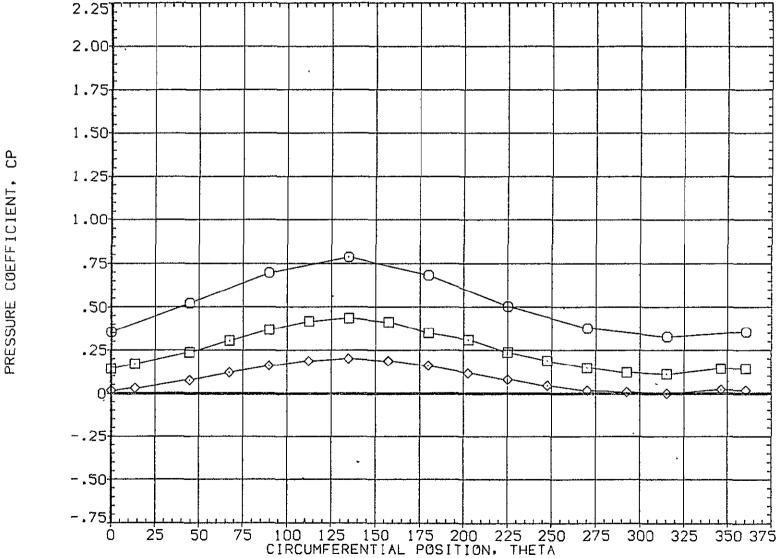


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1481



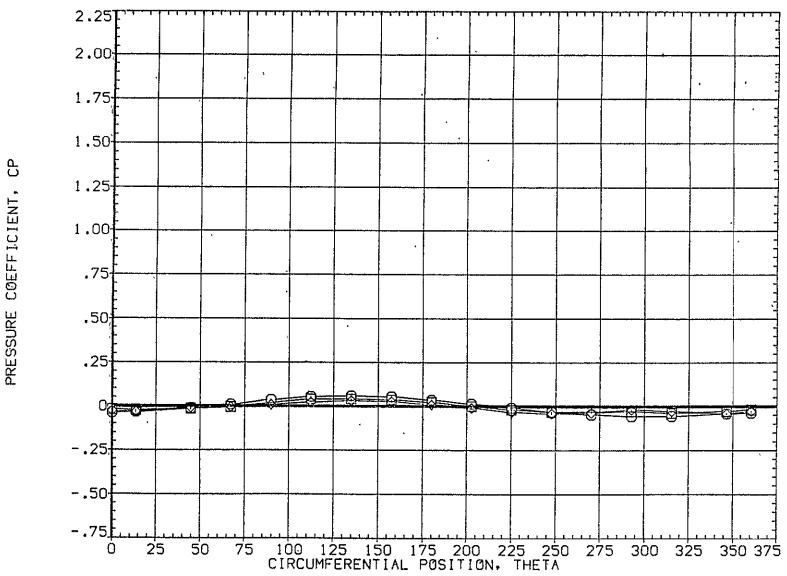


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1482

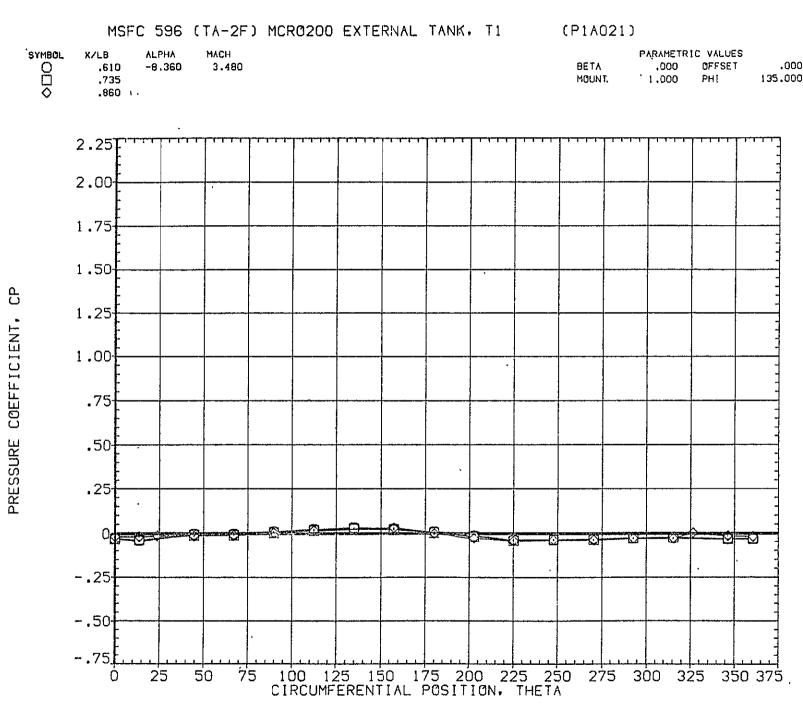
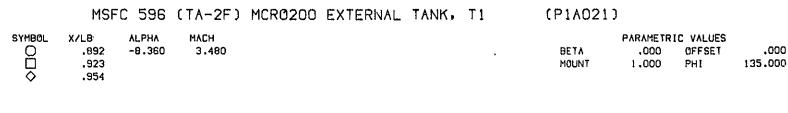


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1483



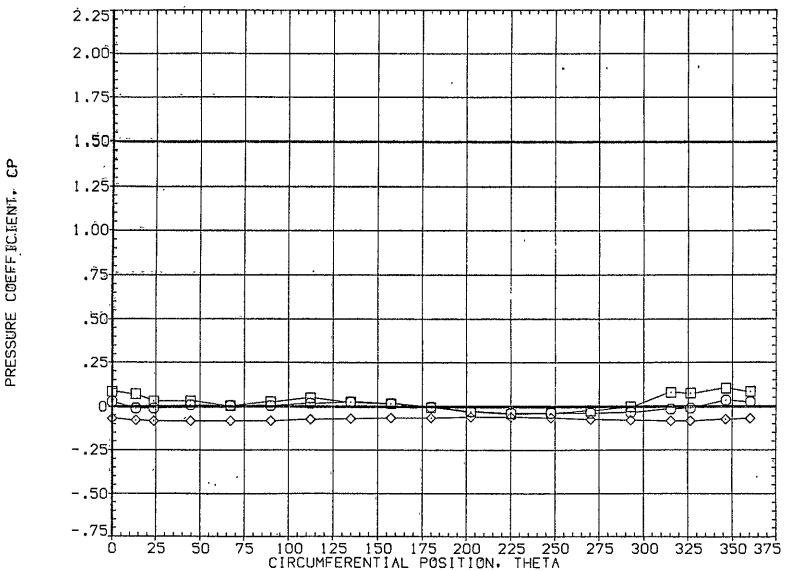


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1484

MBOL	X/LB .055	٨LI	PHA .330	MACH 3.480					TANK			BETA		ARAMETR	IC VALUES OFFSET	5
000	.108	3										MOUN'	r	1.000	PHI	135
	2.25		, , , , , , , , , , , , , , , , , , , 	1111	 	} -1 - 7 - 1 - 1 -	11111	1		11,1-11	 	1	-1	1,,,,,	1	
	2.00	-														
	1.75	- - -														
	1.75	-					<u> </u>									-
	1.50	<u> </u>	· · · · · · · · · · · · · · · · · · ·						 	<u> </u>						-
	1.25	<u>.</u>				·								,		-
	1.00	- - -													,	-
	.75	- - -														-
	•/5	- -	•		_0-		-0-		0							-
	.50							 				0		0-		-0 :
	.25	· - 	<u>—</u>	-0-				-0-	-0			J(,	(-)-			
	0	-	>	-	-	→	*	~	\$	~	} —-€	>		<u> </u>		<u></u> →
		- -														
	25															-
	50	- -														
	75	- - - , , , , ,				J_ J_ 4_4	1 1 1 1 1						, , , ,			

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1485

X/LB

ALPHA

MACH

(P1A022)

PARAMETRIC 'VALUES

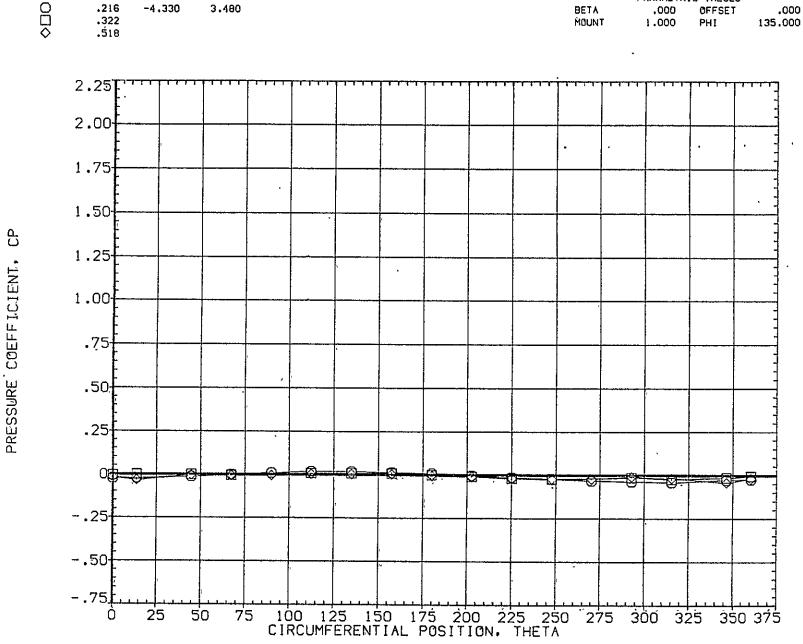


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1486

SYMBOL	X/LB	ALPHA.	MACH	PARAMET	RIC VALUES	
0	.610	-4.330	3.480	BETA .000	OFFSET	.000
ŏ	.735			MOUNT 1.000	PHI	135.000
\diamond	.860					

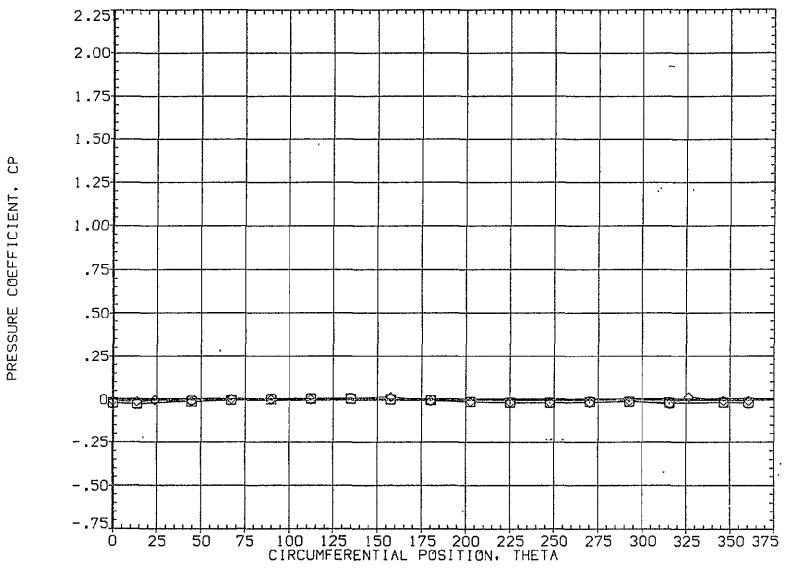


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1487

X/LB

ALPHA

MACH

(P1A022)

PARAMETRIC VALUES

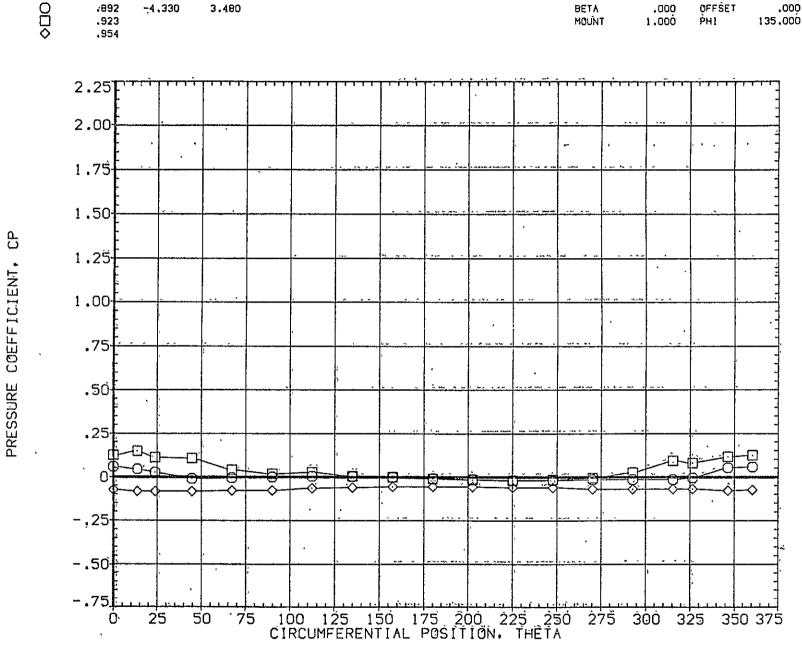


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ÉT - TI WITH PROTUBERANCES PAGE 1488

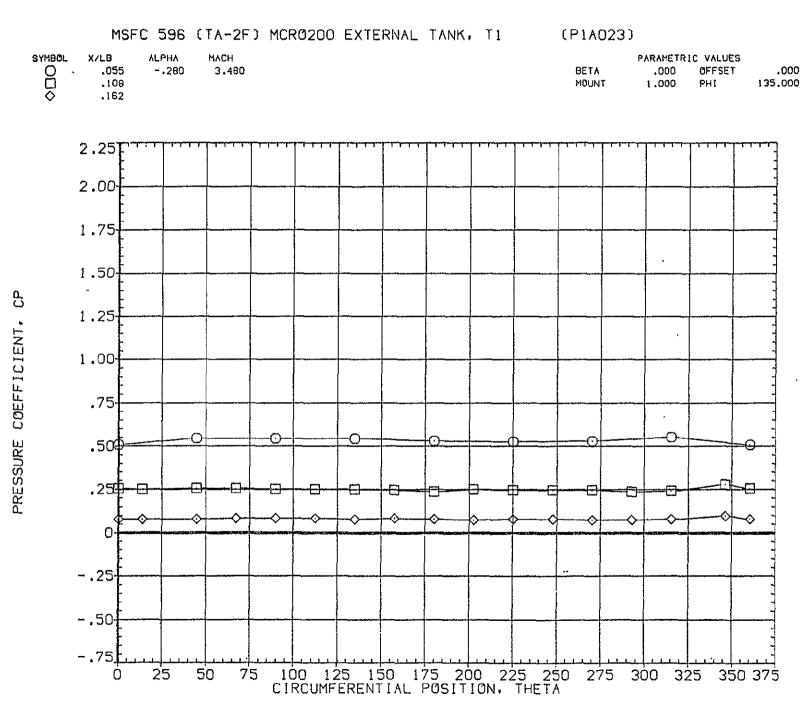


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1489

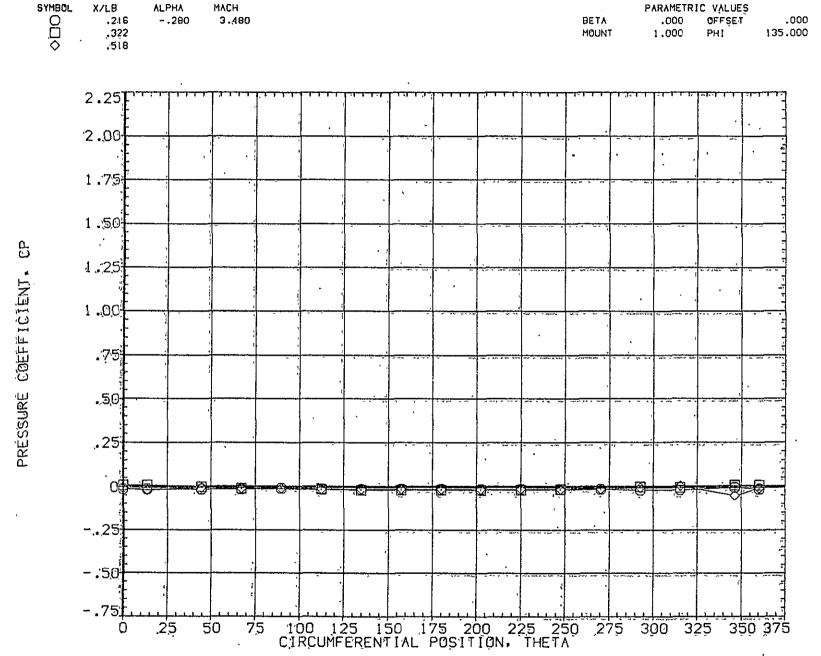


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1490

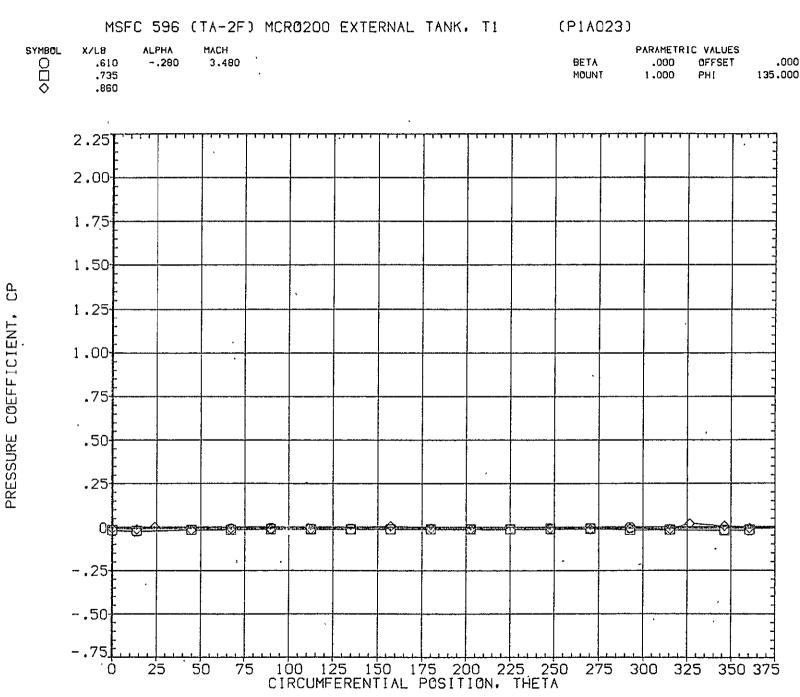


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1491



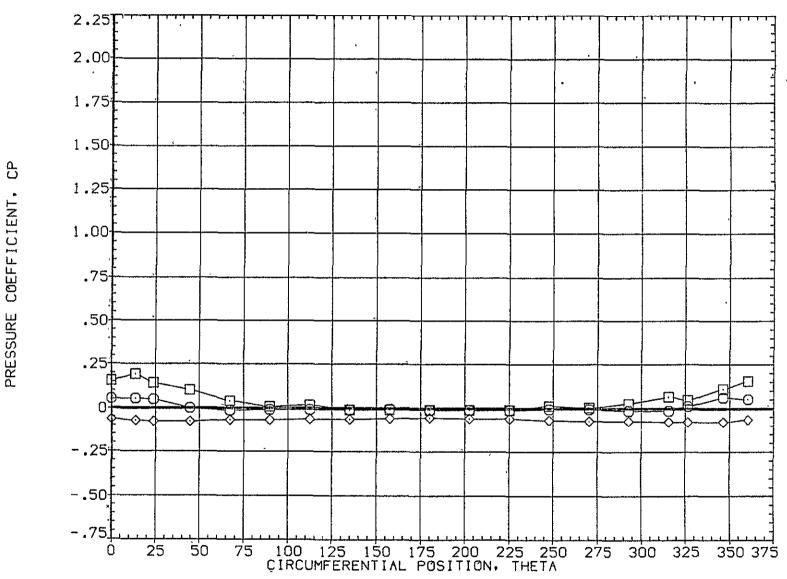
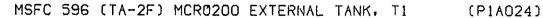


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1492





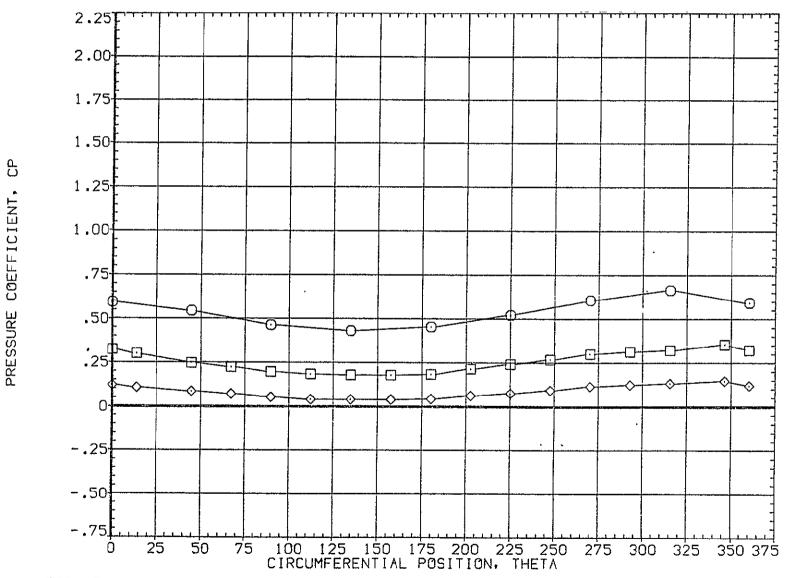


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

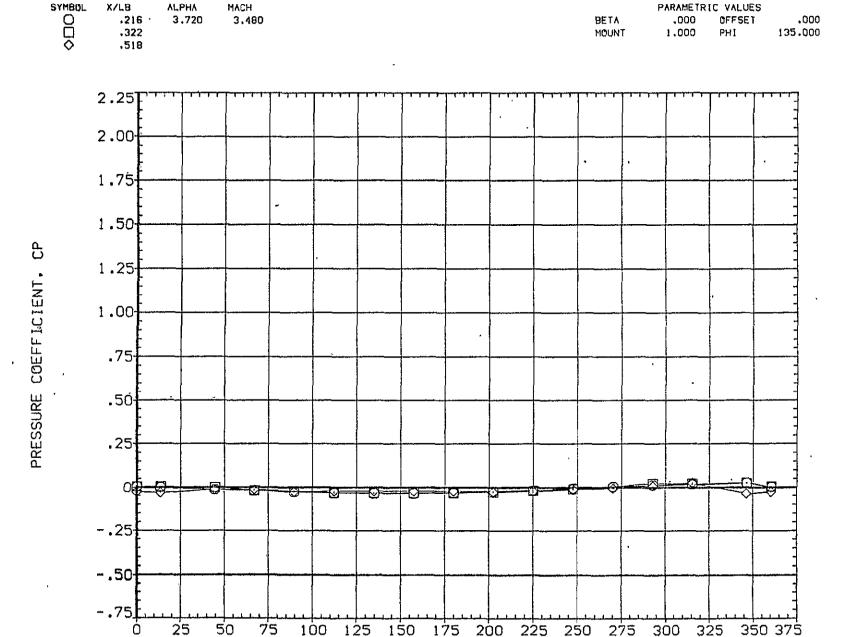


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1494

CIRCUMFERENTIAL POSITION, THETA

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A024) SYMBOL ALPHA MACH PARAMETRIC VALUES X/LB 000 .610 3,720 3,480 BETA ,000 OFFSET .000 MOUNT 1,000 PHI 135.000 .735 .860

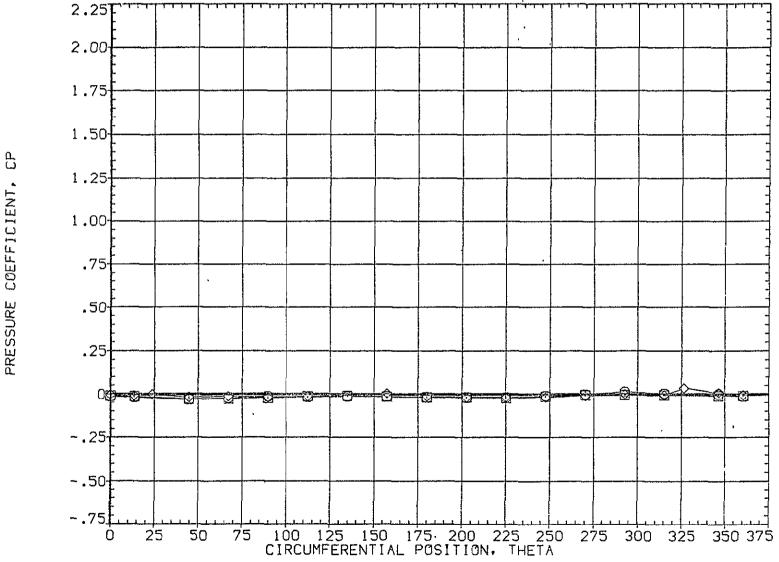


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1495

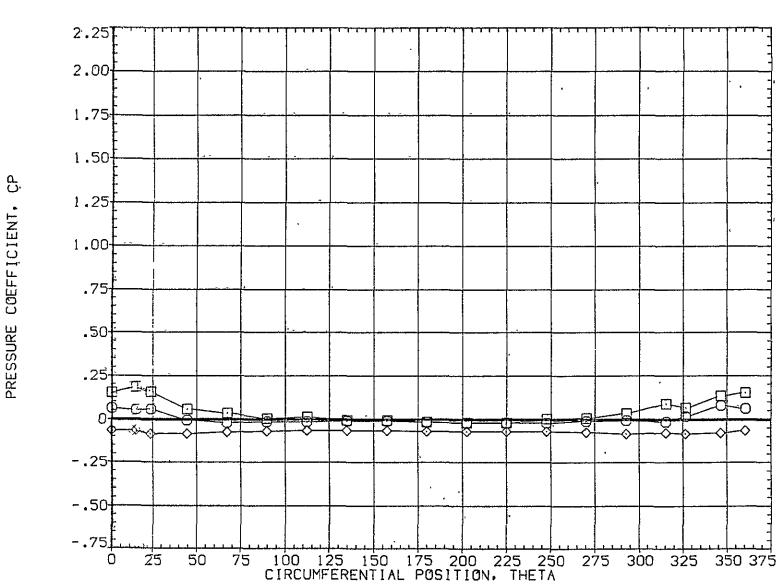


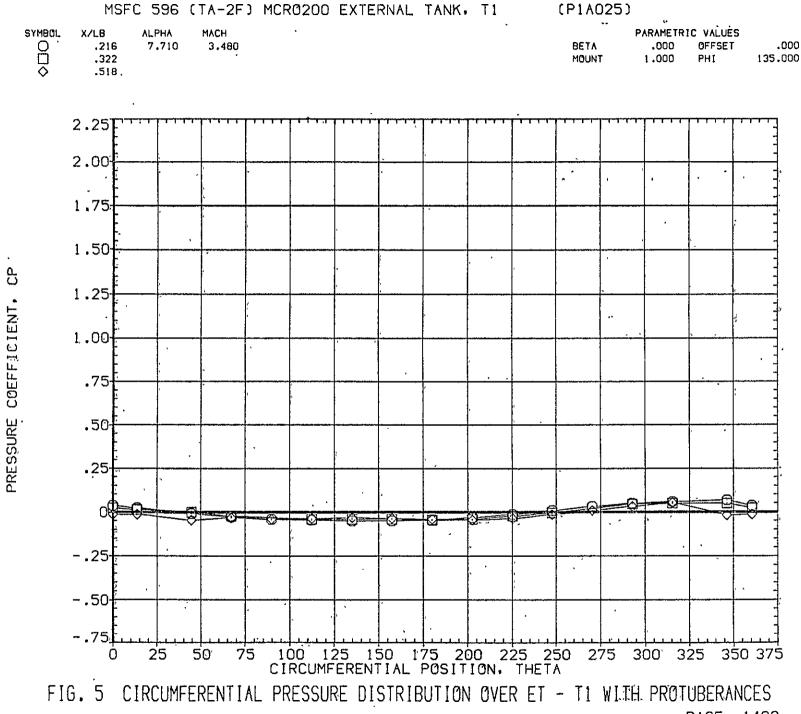
FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - 11 WITH PROTUBERANCES
PAGE 1496

MSEC 596 (TA-2E) MCRM200 EXTERNA	I TANK TI	

(P1A025)

SYMBOL O O	X/LB .055 .108 .162	ALPHA 7.710	MACH 3.480	ı							BETA MOUN		ODD 1.000	IC VALUES OFFSET PHI	.000 135.000
	2.25				7	,,,,,	 			1111	 	 	11111		· · · · · ·
	2.00										<u> </u>				
	1.75		•					,							
0	1.50			•		i									
T, CP	1.25			· .									-		
ICIEN	1.00														
PRESSURE COEFFICIENT,	.75										0		0		70 -
SURE (.50														
PRESS	.25	□				-0	<u></u>			j C					
	0		*	<u></u>		-	-	<u> </u>	\$			asia			
	25														
	50										,				
	75 0	25 5	50 75	1 (00 12	25 15	50 1°	75 20	00 22	25 25 THE TA	50 27	75 31	00 32	25 350	375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1497



PAGE 1498

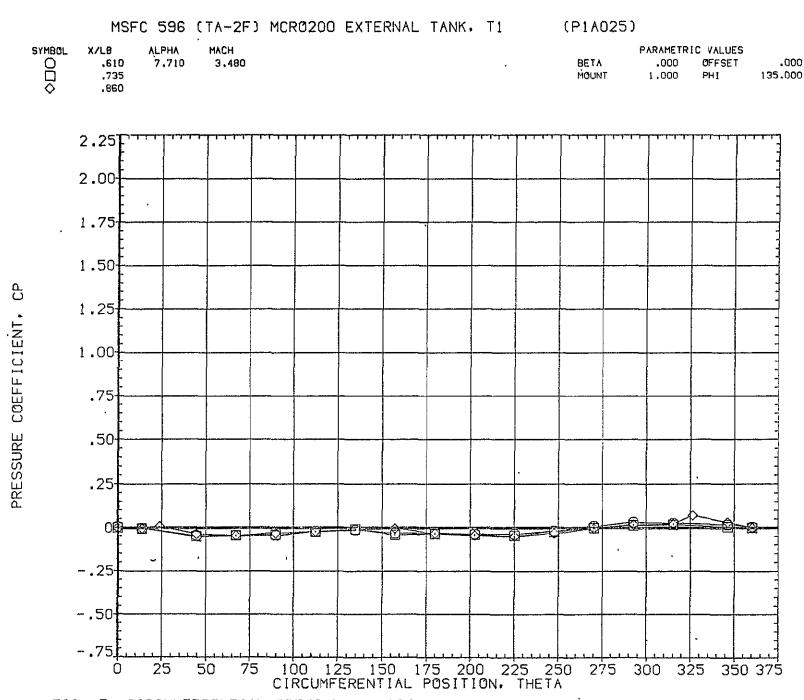


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - 11 WITH PROTUBERANCES
PAGE 1499



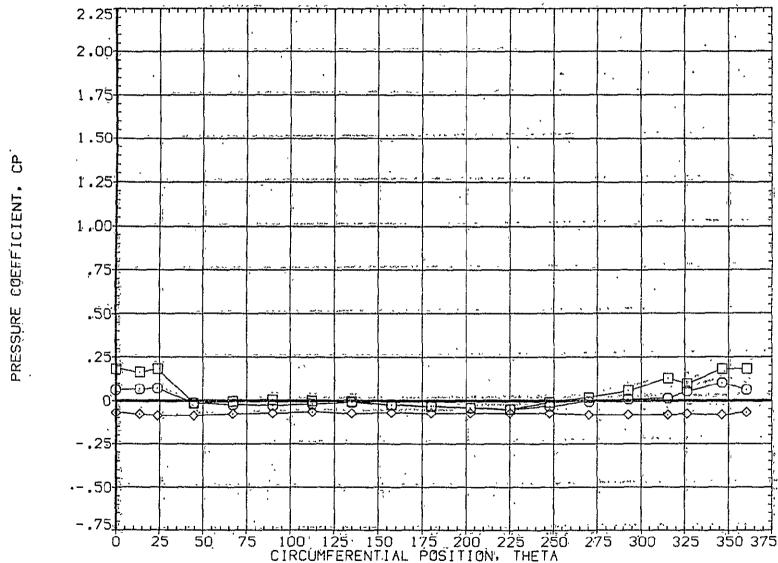


FIG. 5 CIRCUMPERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCÉS

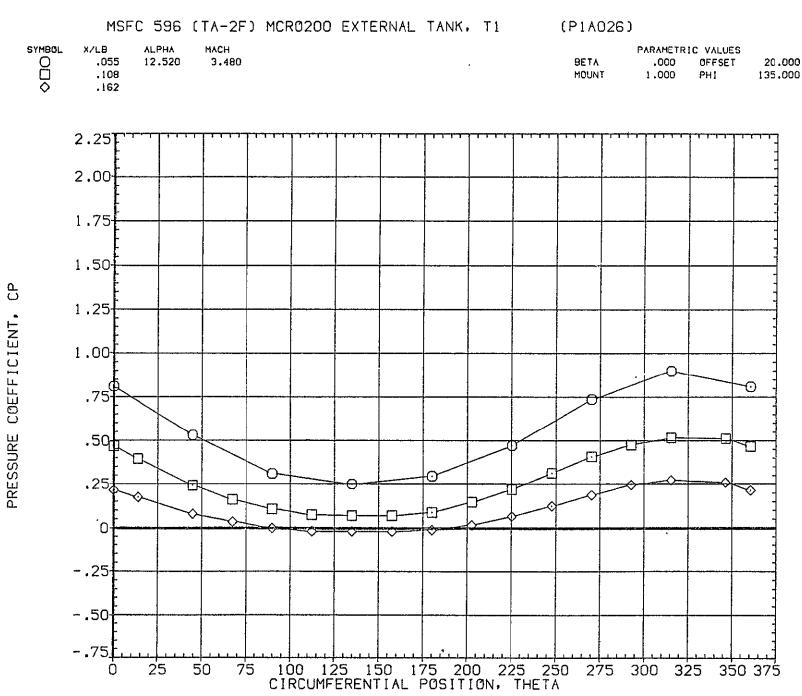


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1501

X/LB

ALPHA

MACH

PARAMETRIC VALUES

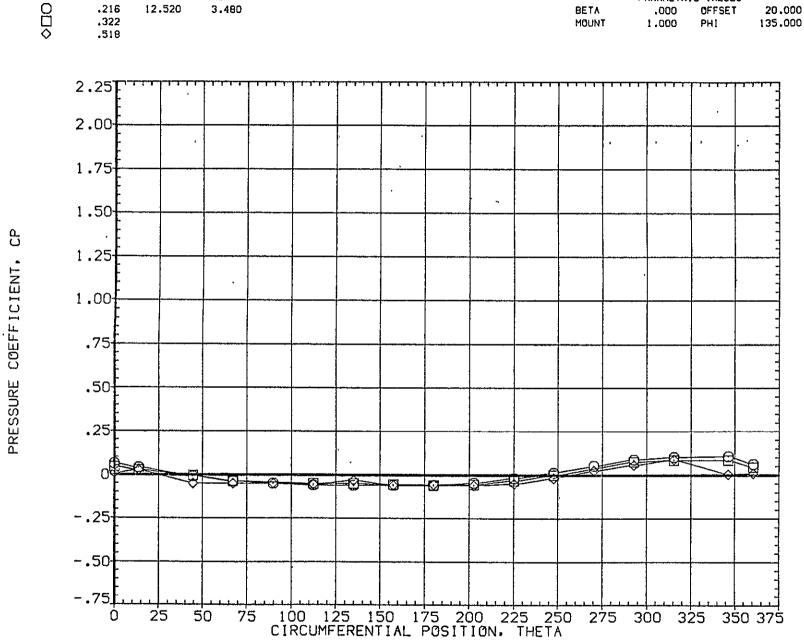


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1502

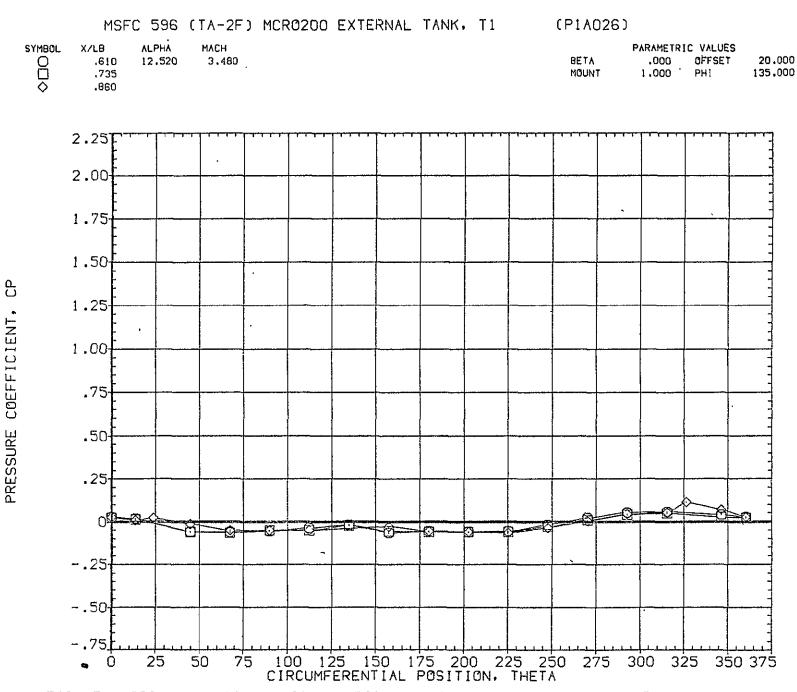


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

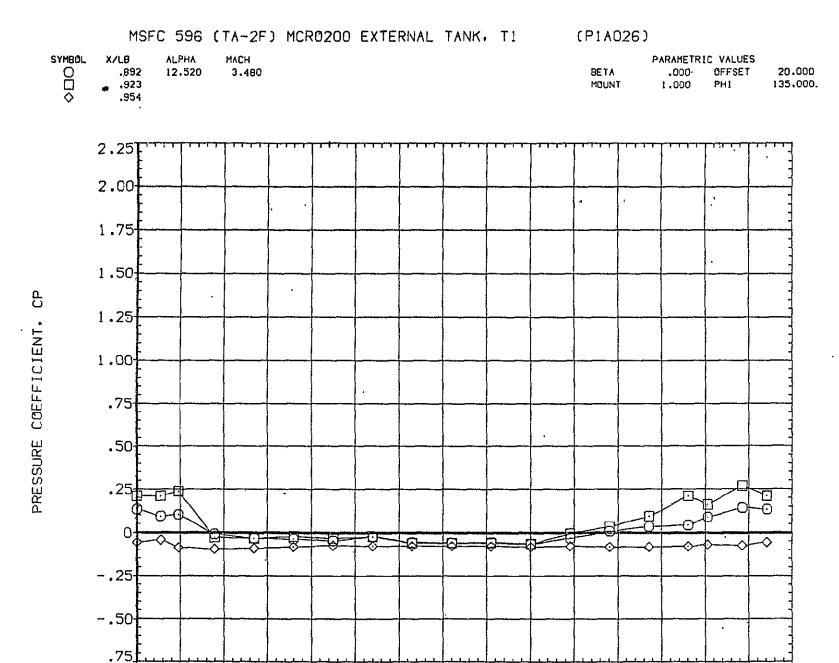


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGÉ 1504

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

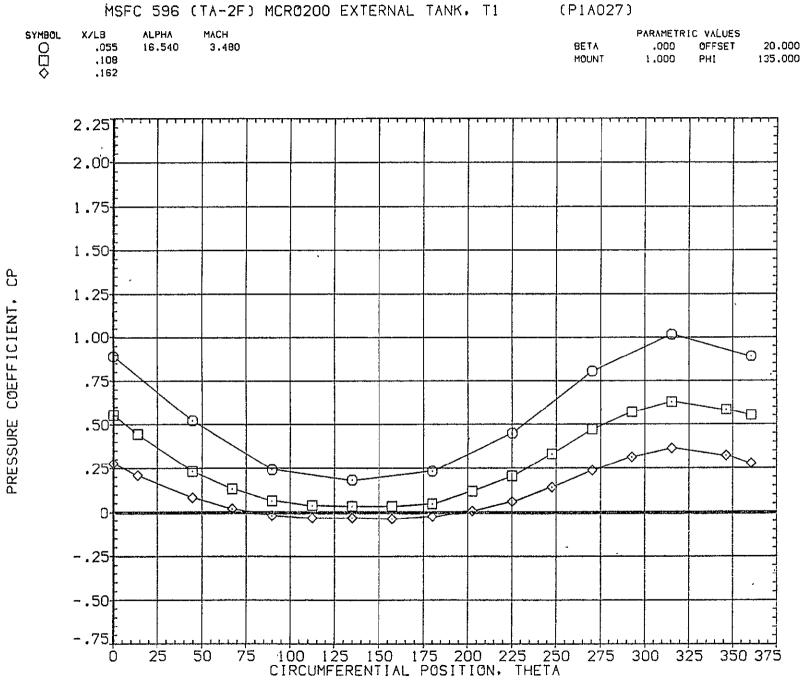
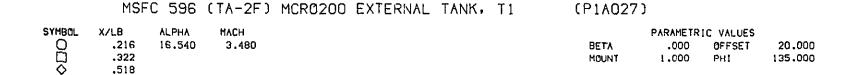


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1505



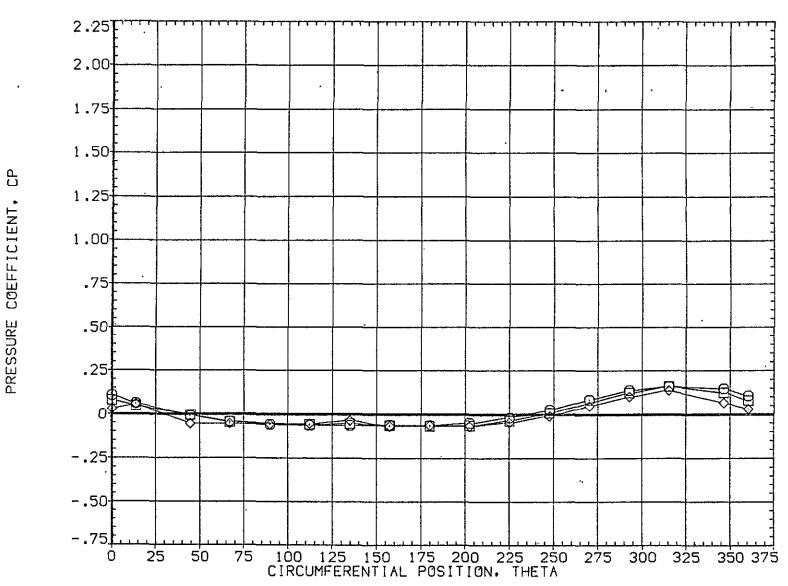


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1506

(P1A027) MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 PARAMETRIC VALUES **ALPHA** MACH SYMBOL X/LB 20.000 0□◊ .000 OFFSET 16.540 3.480 BETA .610 PHI 135.000 MOUNT 1,000 .735 .860 2.25 2.00-1.75 1.50-CP 1.25 COEFFICIENT. 1.00 .75 PRESSURE .50 .25 **3**--63--.25 -.50 -.75<u>.</u> 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 25 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1507

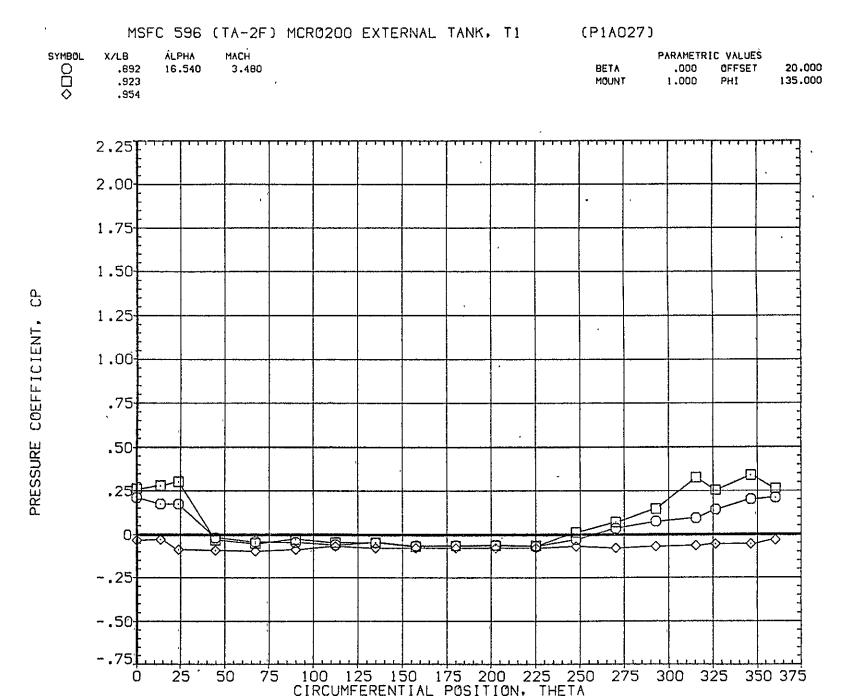


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1508





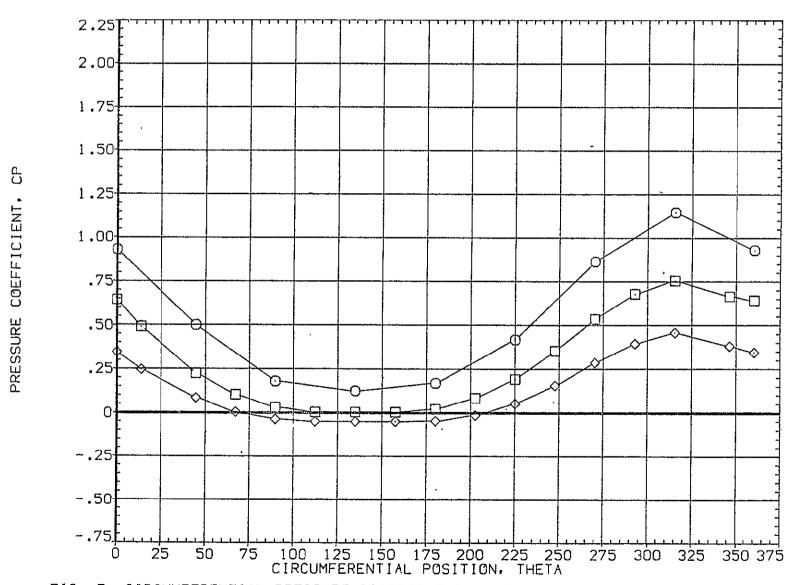


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1509

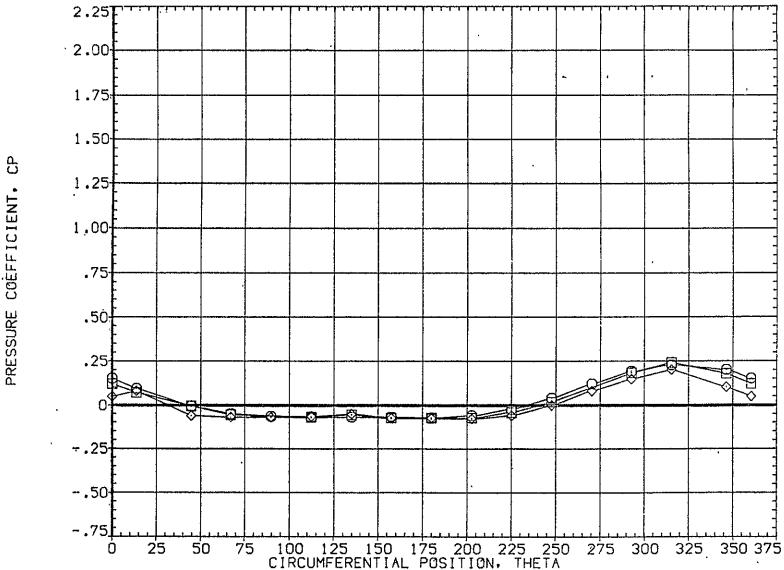


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1510

SYMBOL O O X/LB . **ALPHA** МАСН PARAMETRIC VALUES 20.610 3.480 OFFSET BETA .000 20,000 .735 MOUNT 1.000 PHI 135,000 .860

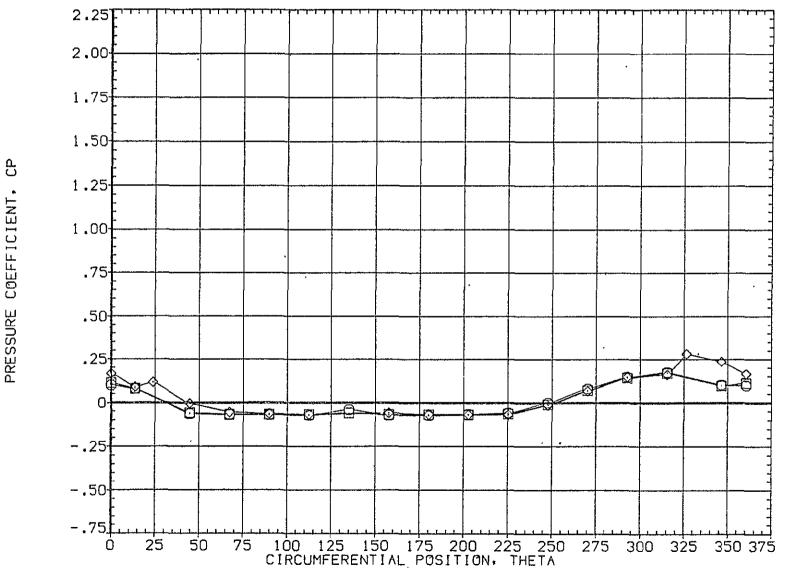
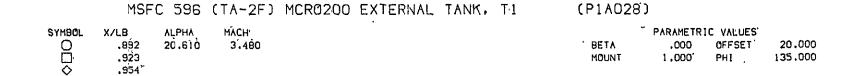


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1511



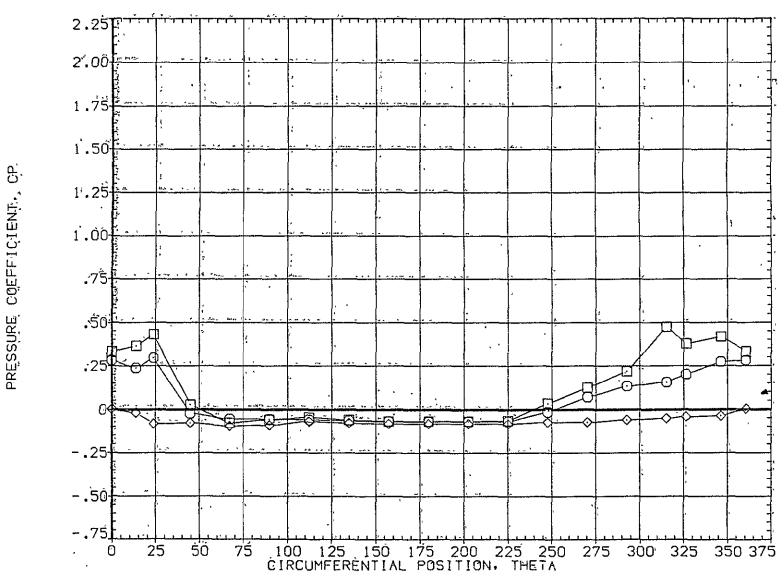


FIG. 5 CIRCUMFERENTIAL PRÈSSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1512

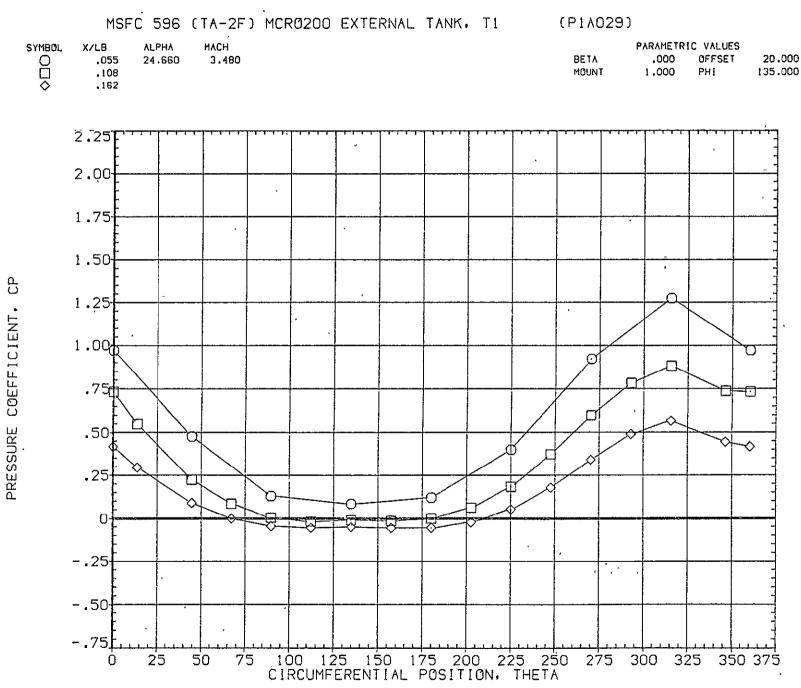


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1513



1.00

.75

.50

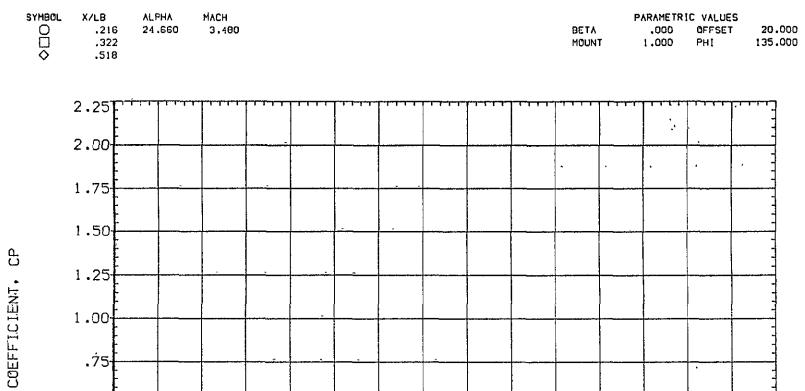
-.25

-.50

-.75

50

PRESSURE



CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1514

100 125 150 175 200 225 250 275 300 325 350 375

MSEC	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T 1	

SYMBOL

X/LB

ALPHA

MACH

(P1A029)

PARAMETRIC VALUES

	.610 .735 .860	24.66	30	3.480								BETA MOUN		.000	OFFSET PHI	20 135
~	.000															
	2.25		1-1-1			1	1,,,,	71377	1111	 	7 1 1 1 1	 	71111	7	11111	
	2.00					ļ	<u> </u>	<u> </u>	-			<u> </u>	ļ	ļ		
	, ,,,															
	1.75															
	1.50													<u> </u>	 	
	1.25							 						,		
	1.00			,						1	<u> </u>					
	.75								ļ							
	E															
	.50							 			-	 -				
	.25		_			 					ļ		_ ®	-0		
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			Ö	<u></u>		0	-0-	O	0	J						
	25			 -		 						 		,		
	50				;	 		-								=
	75				,]				,		- -

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1515

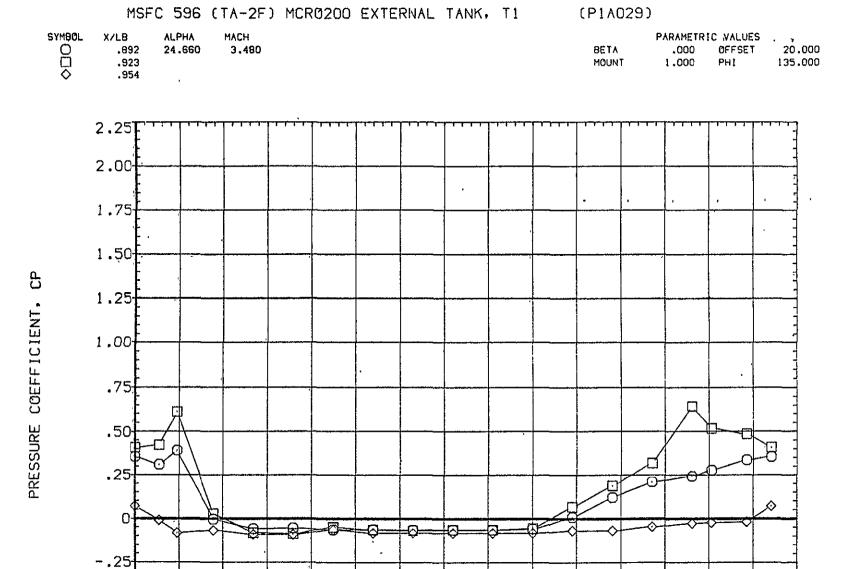


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1516

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

-.50

50

25

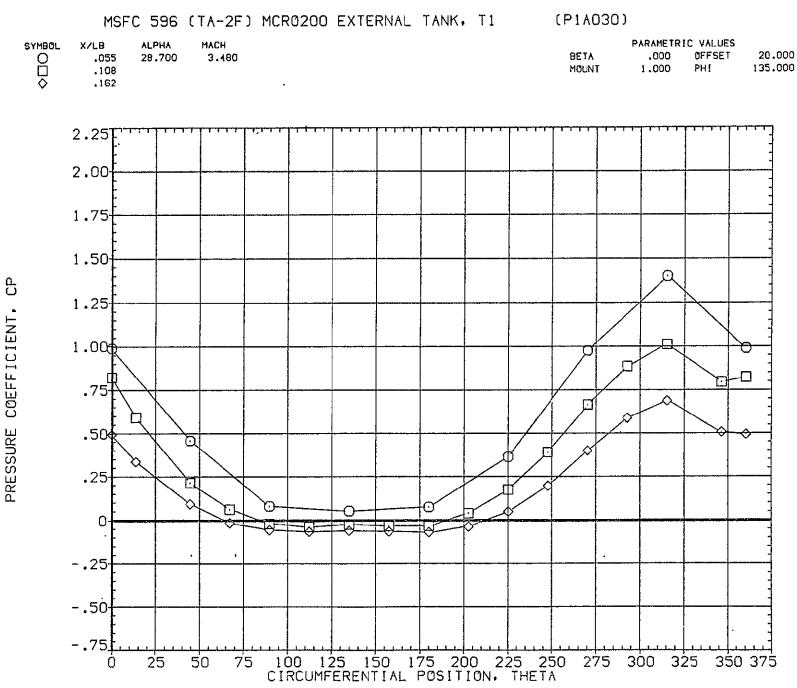


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1517



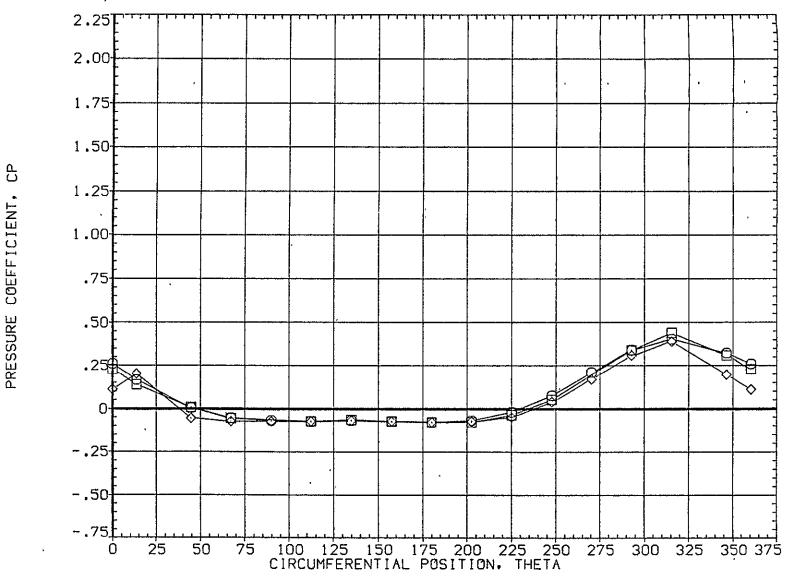


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET = T1 WITH PROTUBERANCES
PAGE 1518

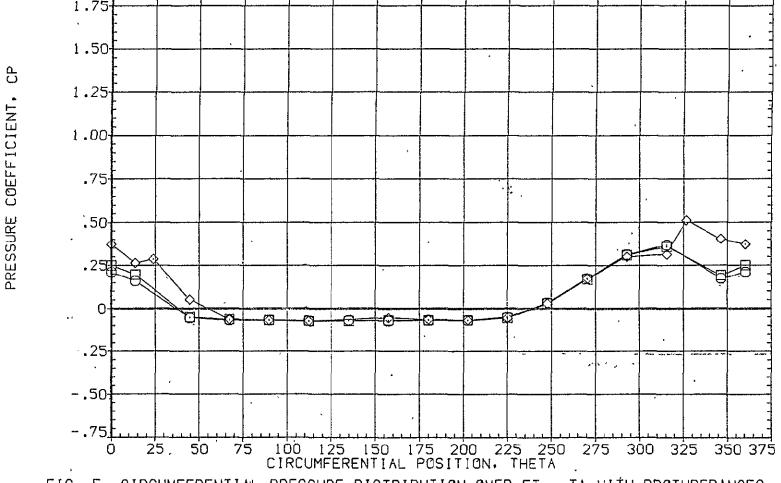


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

(P1A030)



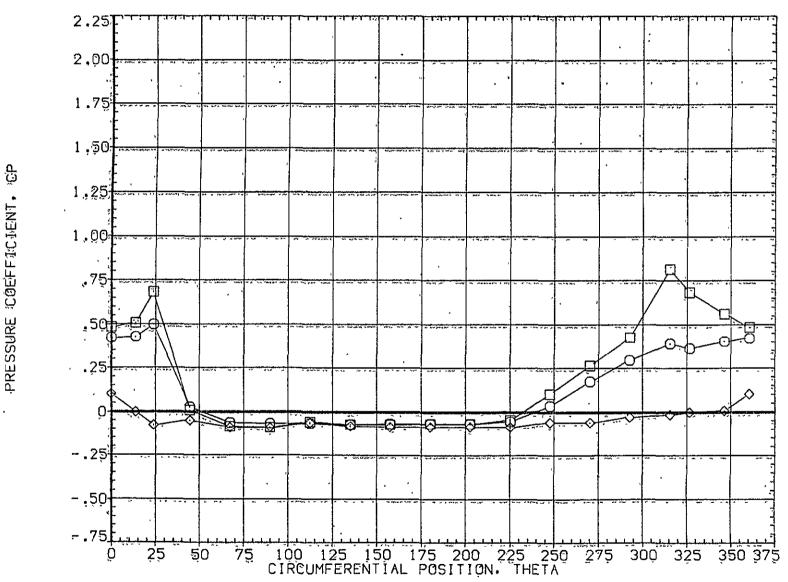


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES.

PAGE 1520

(P1A031)

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	LUES			
0	,05\$	-8.360	3.480	BETA .000 OFFSET	.000			
	,108			TAUDM 1.000 PHI	180.000			
Δ	. 162							

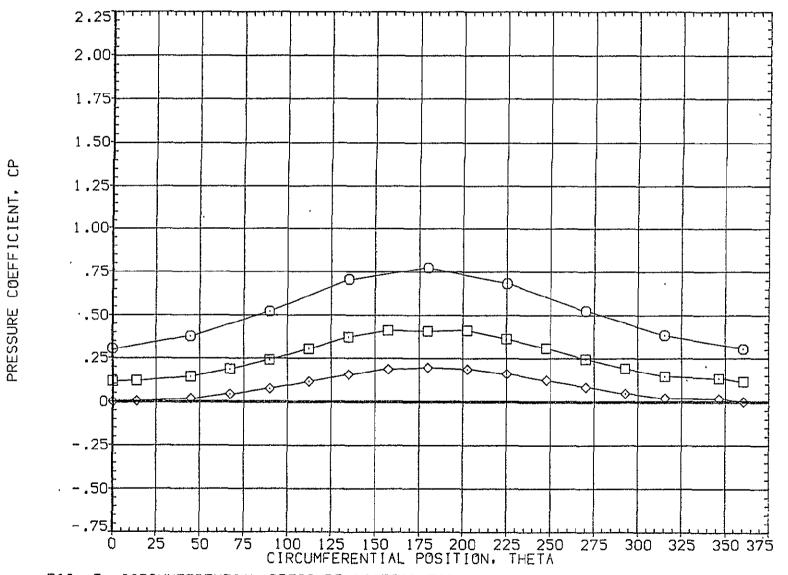


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

SYMBOL

X/LB

.216

ALPHA

-8.360

MACH

3.480

BETA

PARAMÉTRIC VALUES

OFFSET

.000

.000

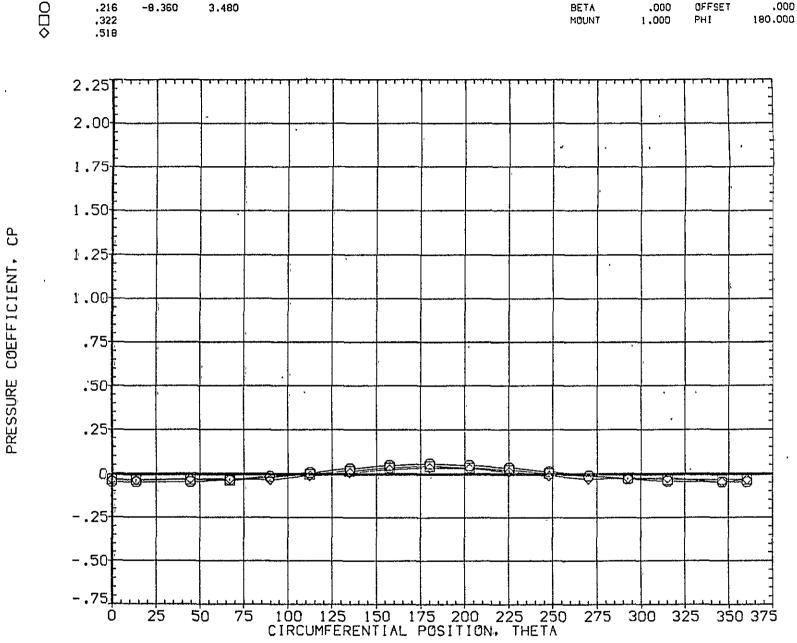


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1522

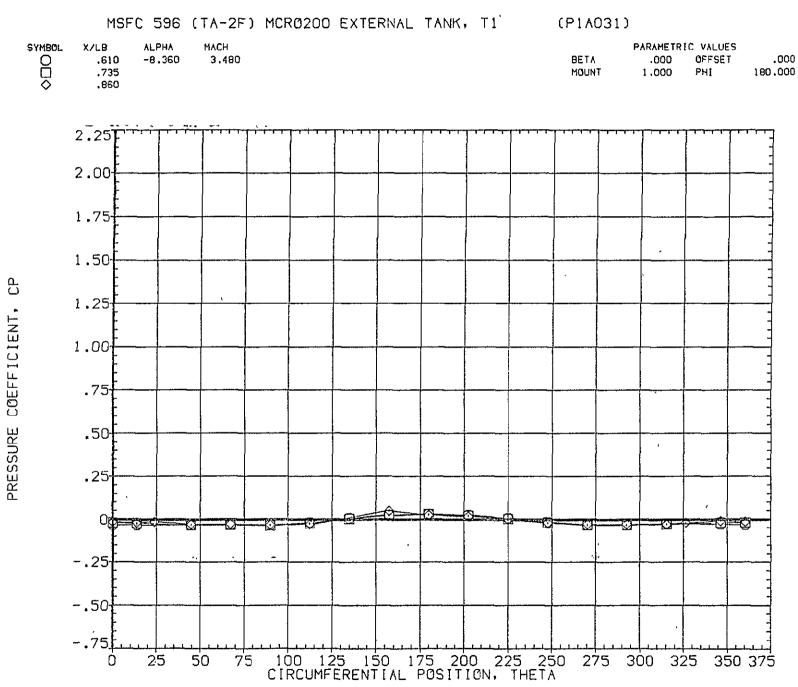


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1523

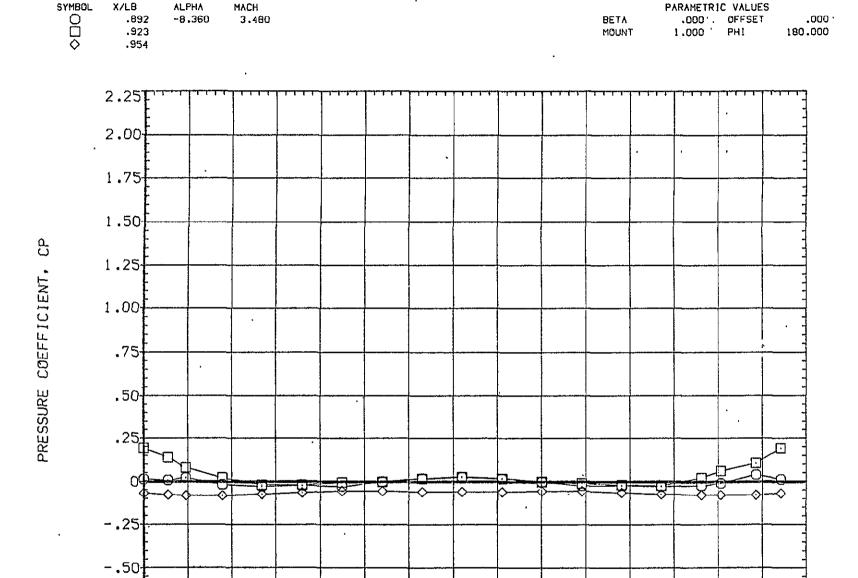


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1524

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.75]

50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1525

(P1A032)

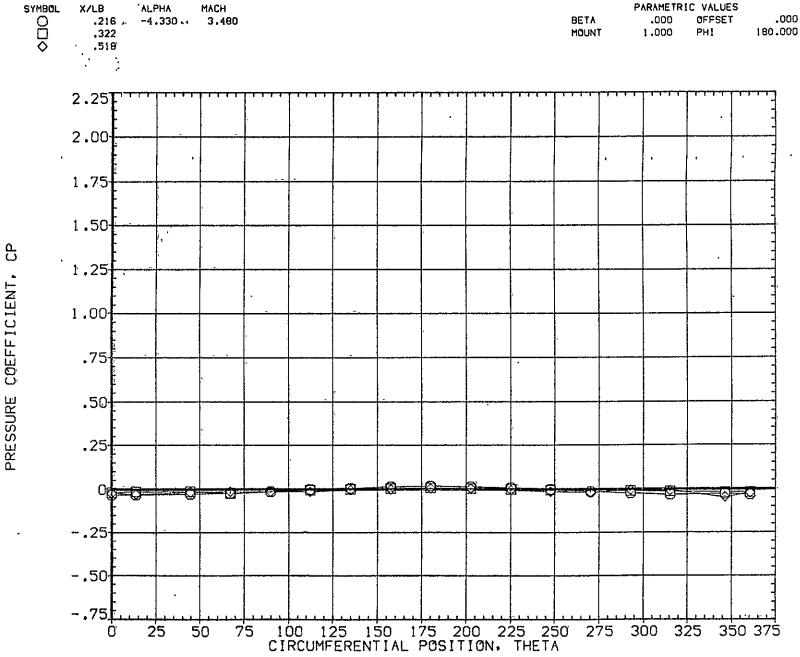


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

(P1A032) MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 PARAMETRIC VALUES SYMBOL X/LB **ALPHA** MACH 0□◊ .000 OFFSET .000 BETA .610 -4.330 3,480 .735 MOUNT 1,000 PHI 180,000 .860 2.25 2.00 1.75 1.50-9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 -.75 150 175 200 225 250 275 300 325 350 375 50 100 125 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1527

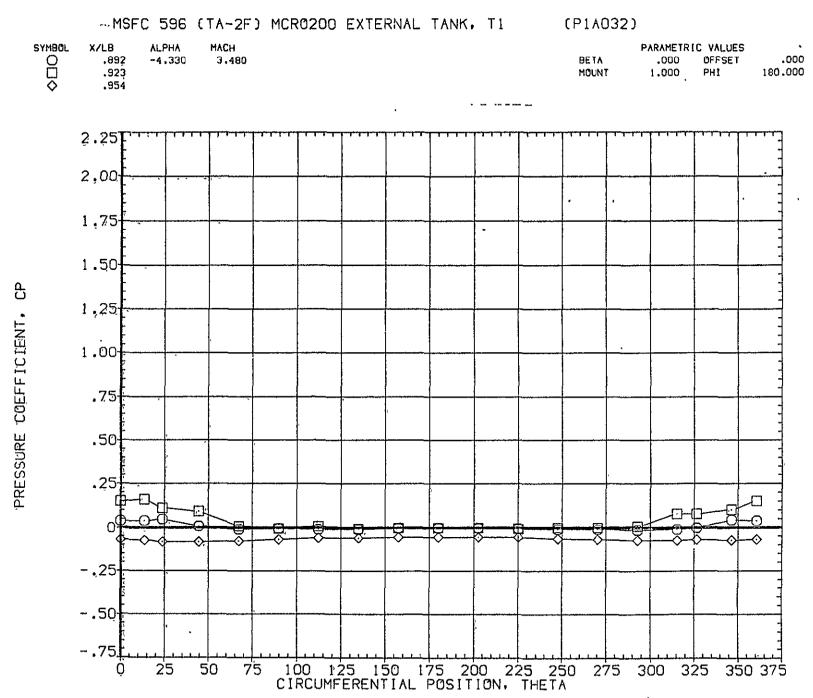


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1528

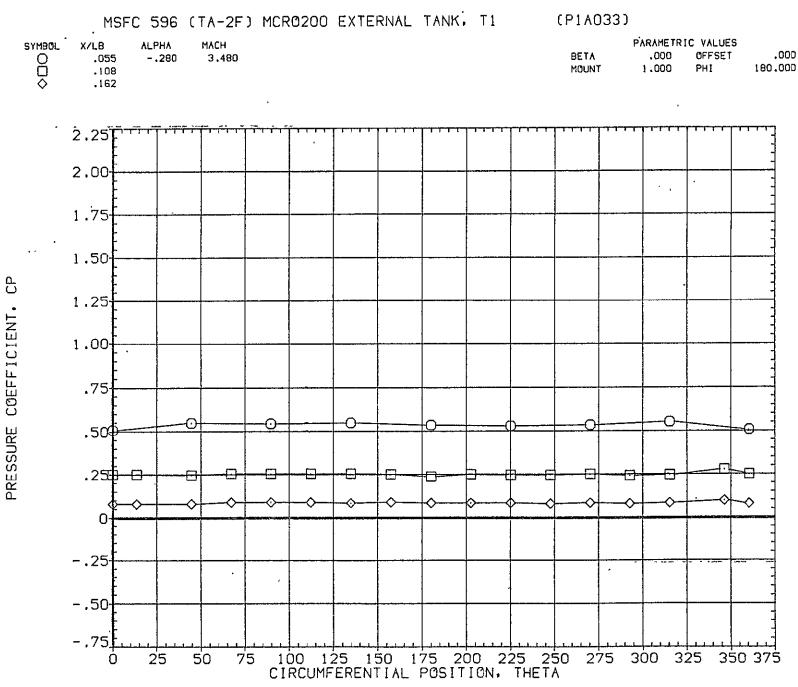


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1529

.518

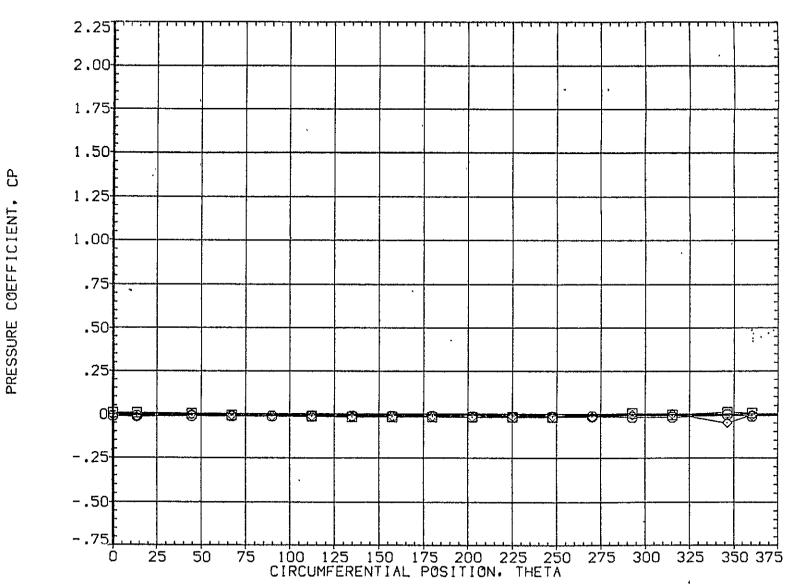


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1530

(P1A033) MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 SYMBOL O O O **ALPHA** MACH PARAMETRIC VALUES OFFSET ∵ ,610 .000 -,280 3,480 BETA .735 MOUNT 1.000 PHI 180.000 .860 2.25] 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 -.75 100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION. THETA 50 75 275 300 325 350 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1531

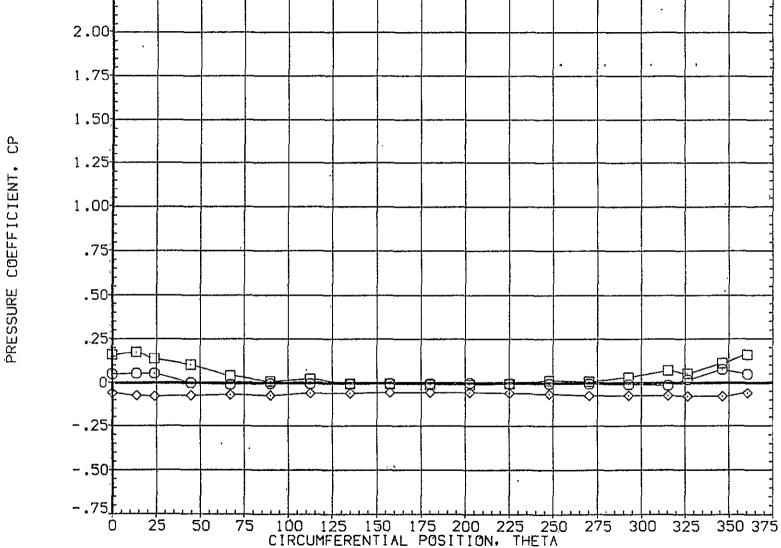
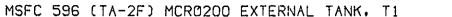


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1532

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1533



(P1A034)

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 .216 3.770 3.480 BETA .000 OFFSET .000 .322 MOUNT 1.000 PHI 180,000 .518

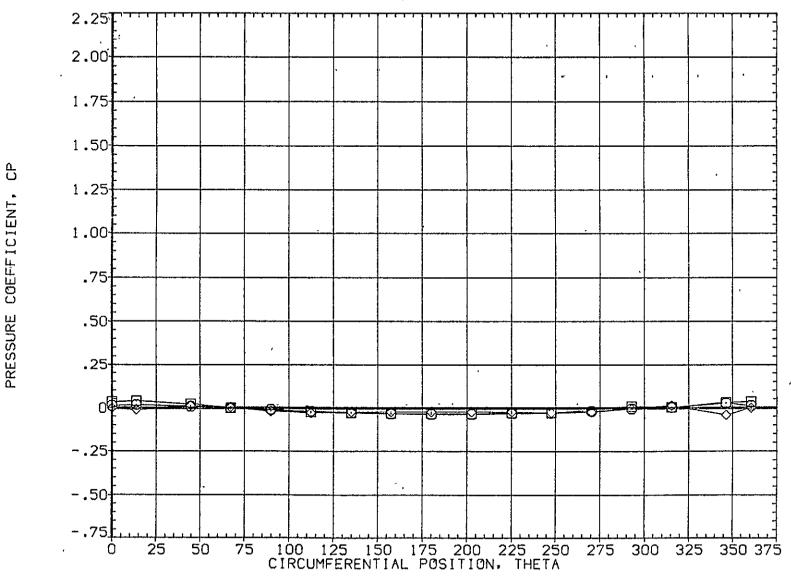


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1534

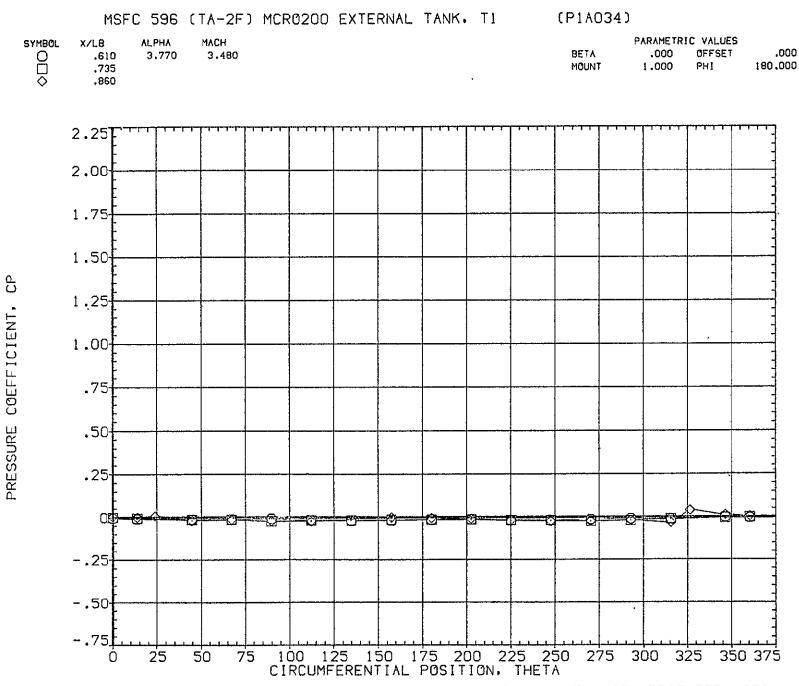


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1535

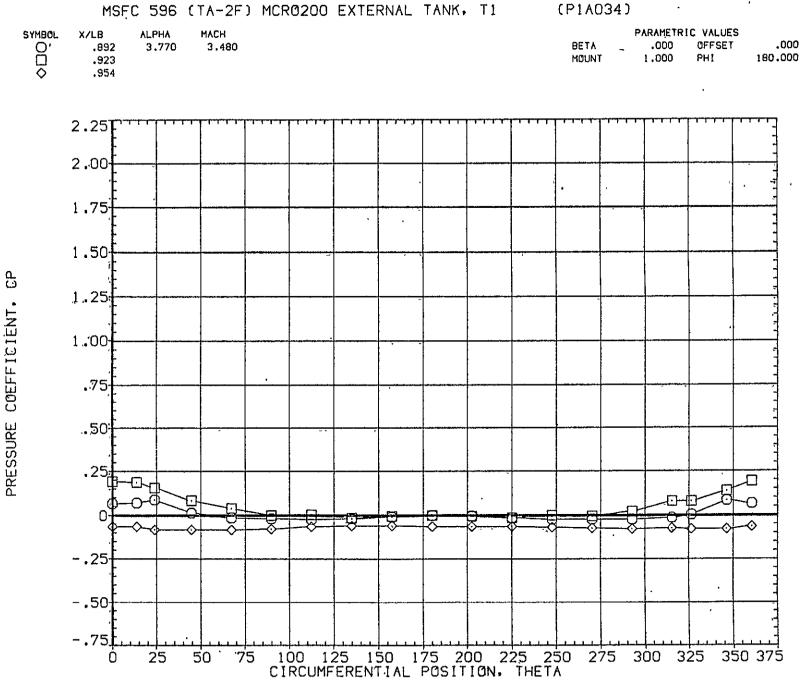


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1536

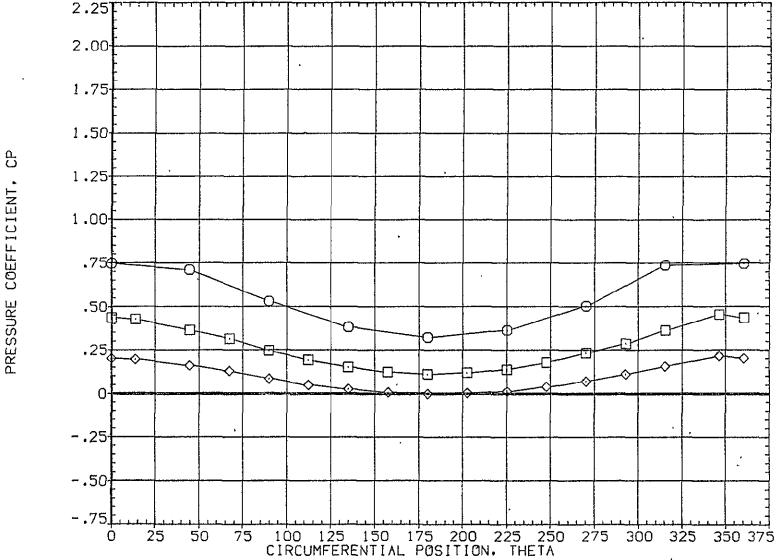


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1537

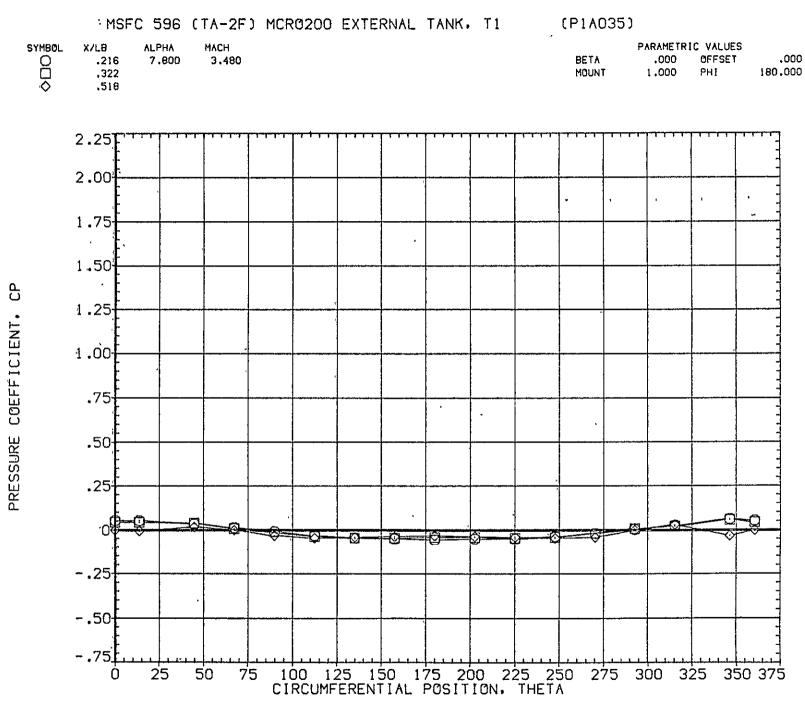


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1538

	MSF	C 596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T 1	(P1A035)			
SYMBOL O O O	X/LB .610 .735 .860	ALPHA 7.800	MACH 3.480					BETA MOUNT	PARAMETR .000 1.000	OFFSET PHI	.000 180.000

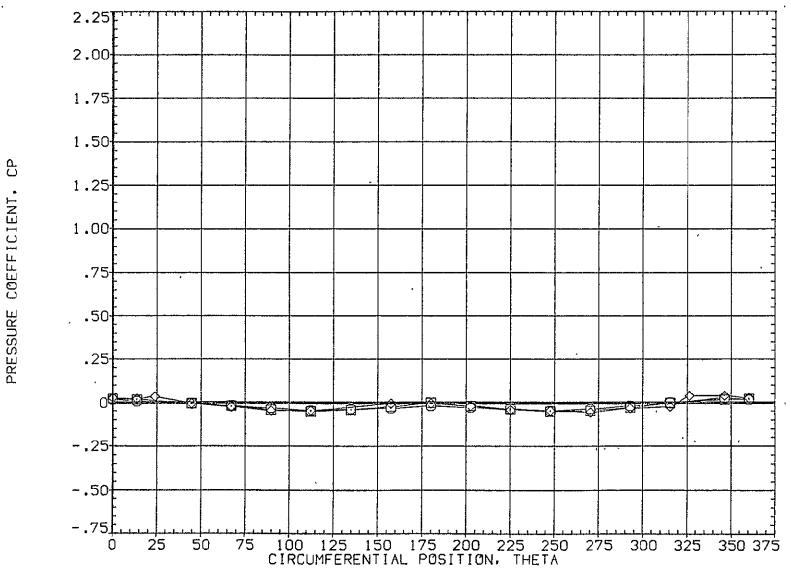


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1539

.954

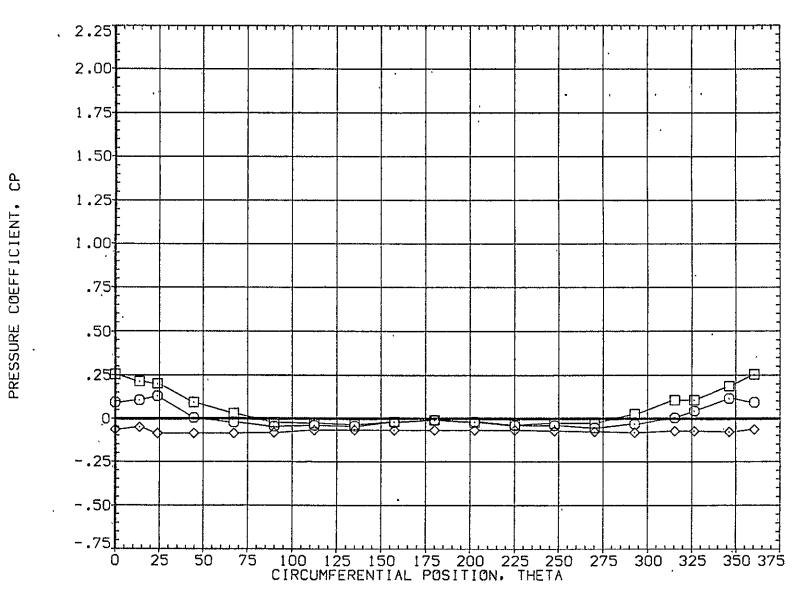


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1540

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A036)

SYMBOL	'X/LB	ALPHA	MACH	PARAMETRI	C VALUES	•
2	.055	12.540	3.480	BETA .000	OFFSET	20,000
لبا	.108			1,000 mount 1,000	PHI	180.000
♦,	.162					

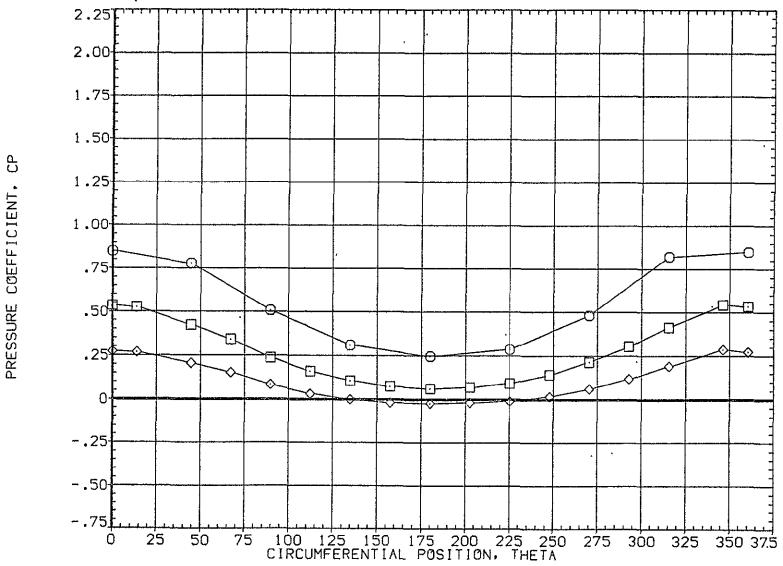


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1541

X/LB

ALPHA

MACH

(P1A036)

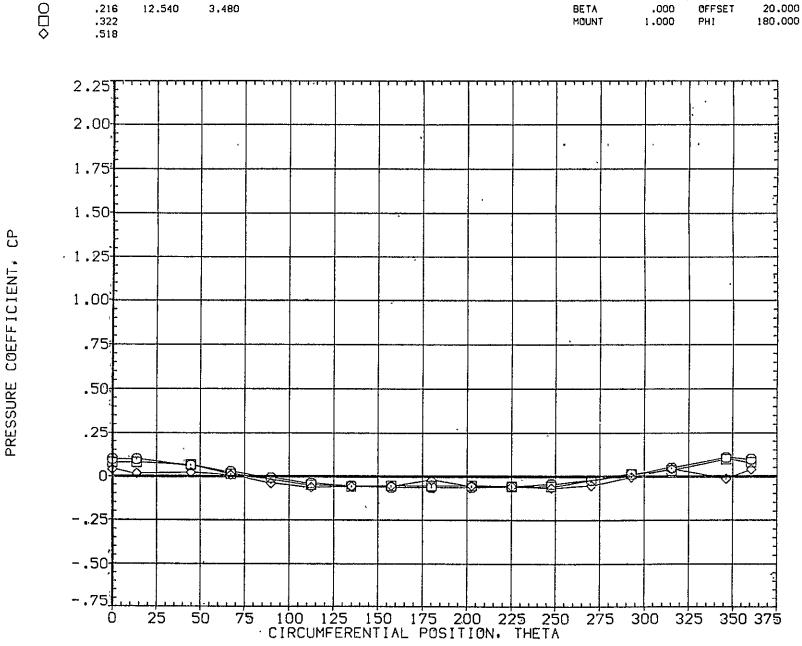
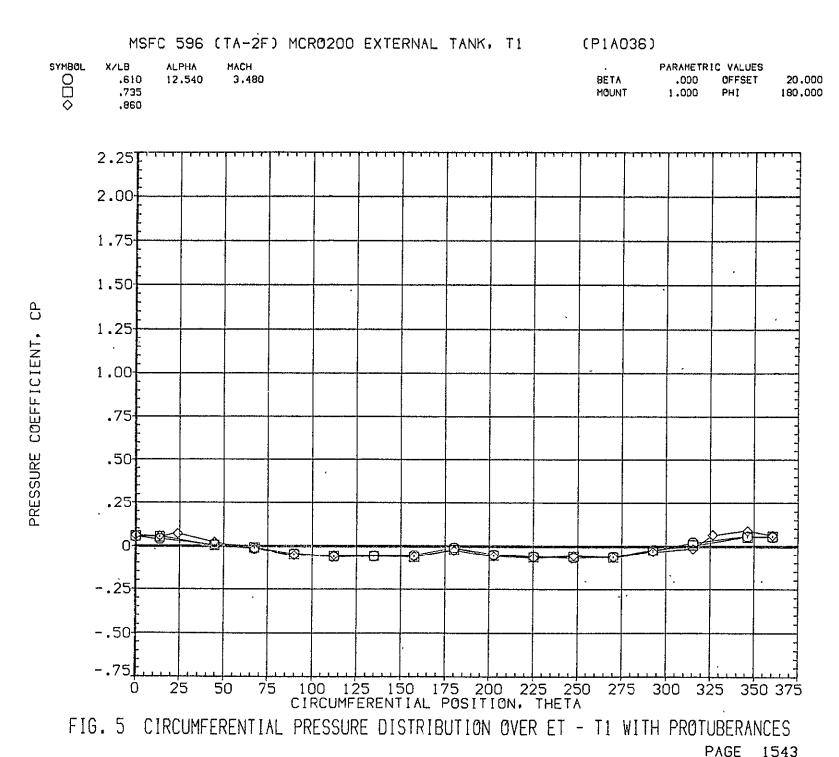


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1542



X/LB

ALPHA

MACH

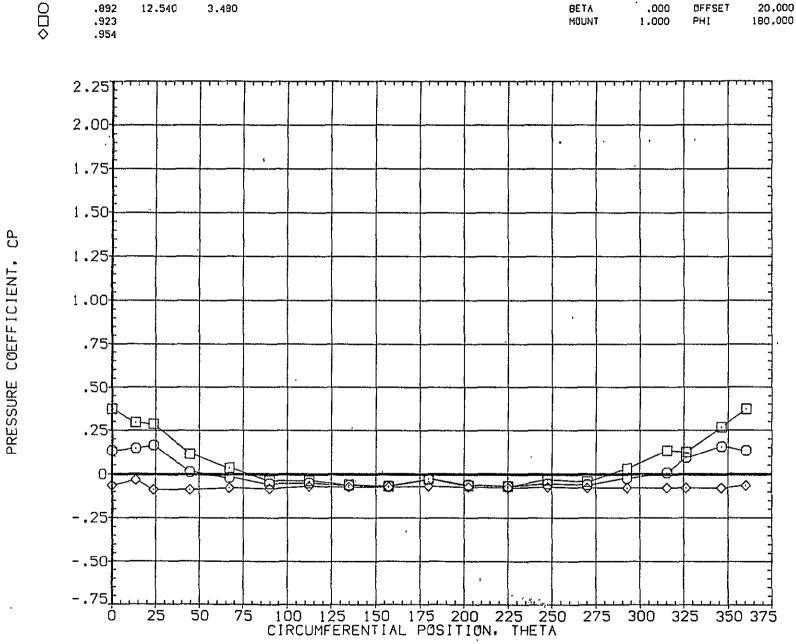
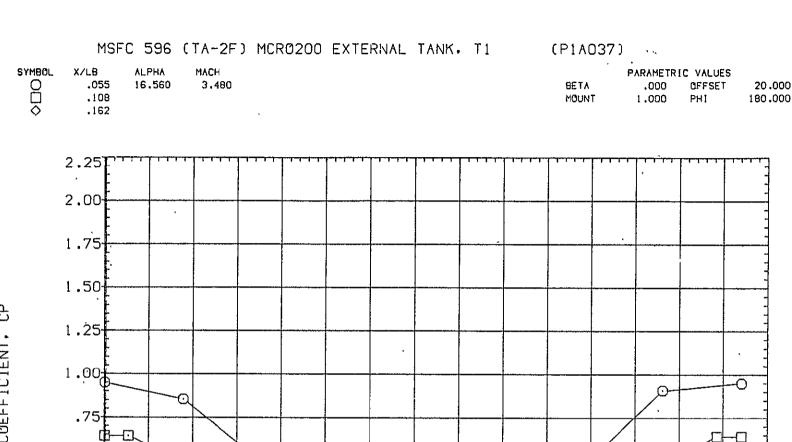


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1544



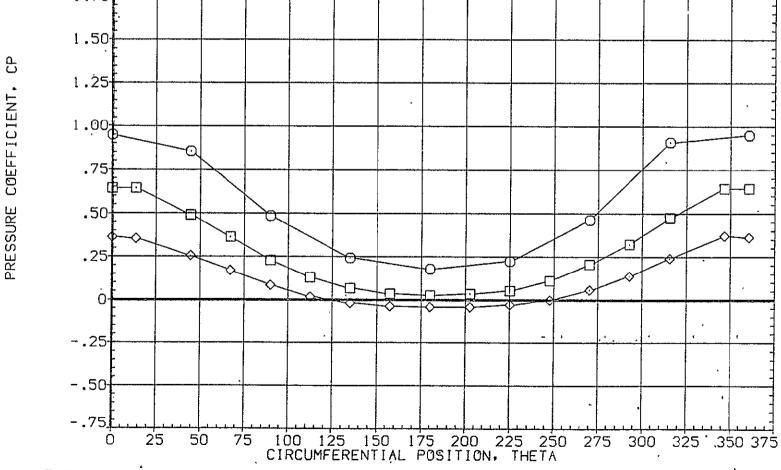


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1545

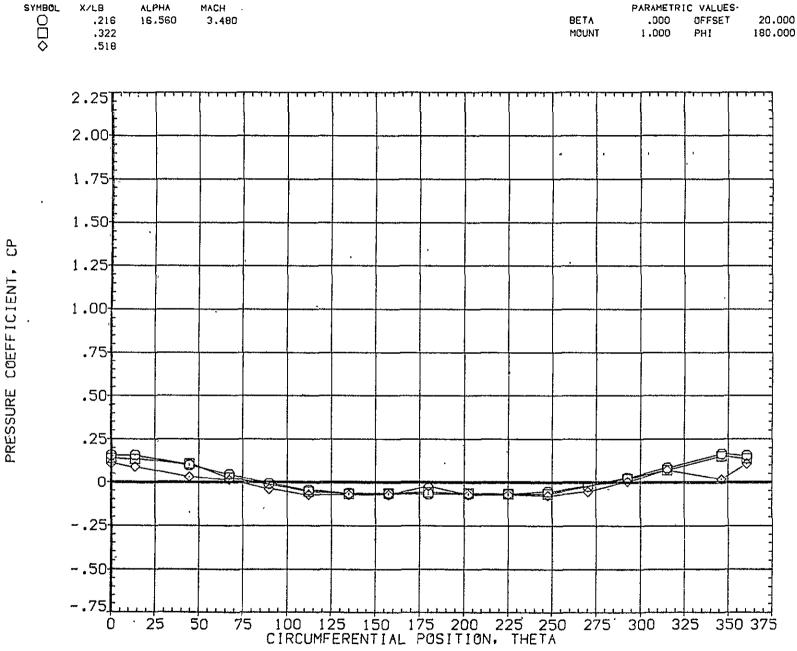


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1546

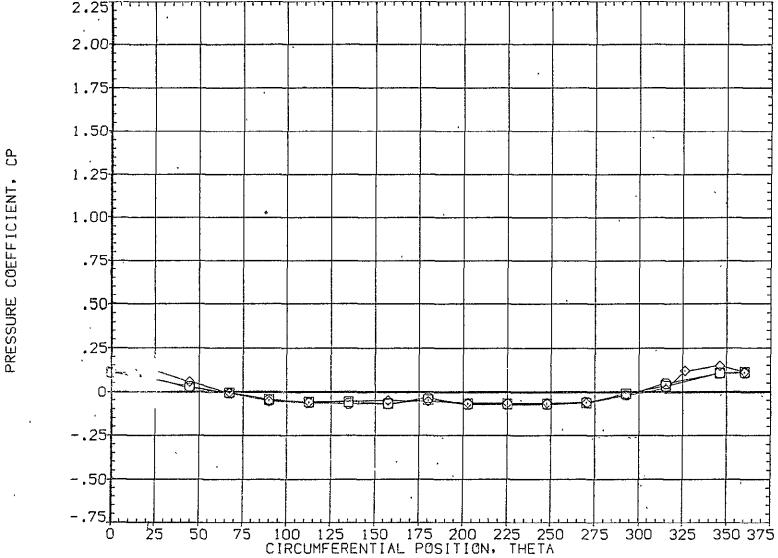


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1547

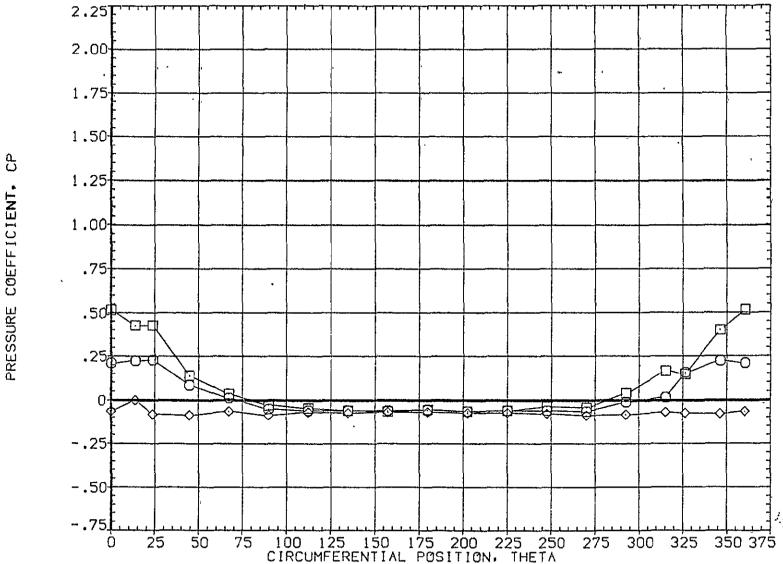


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
. PAGE 1548

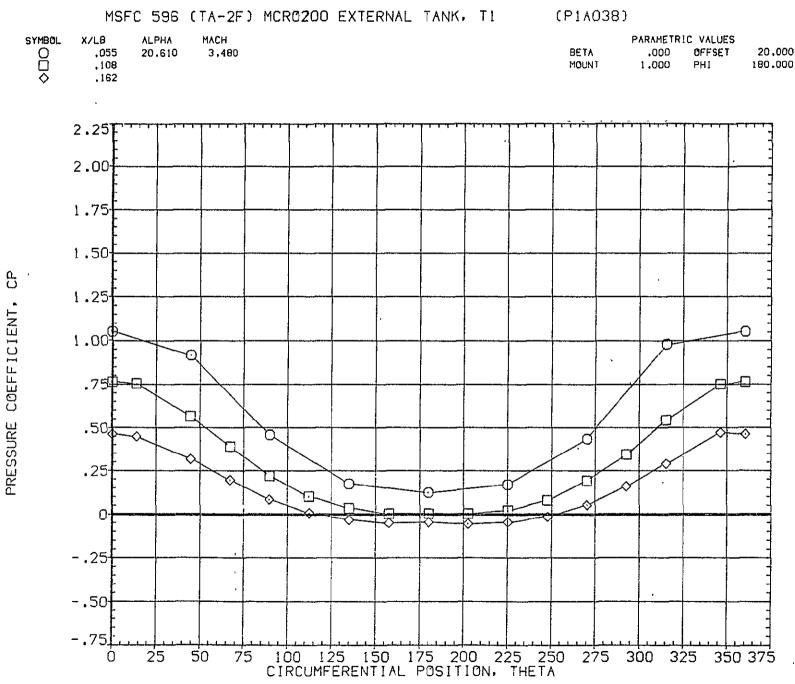


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1549





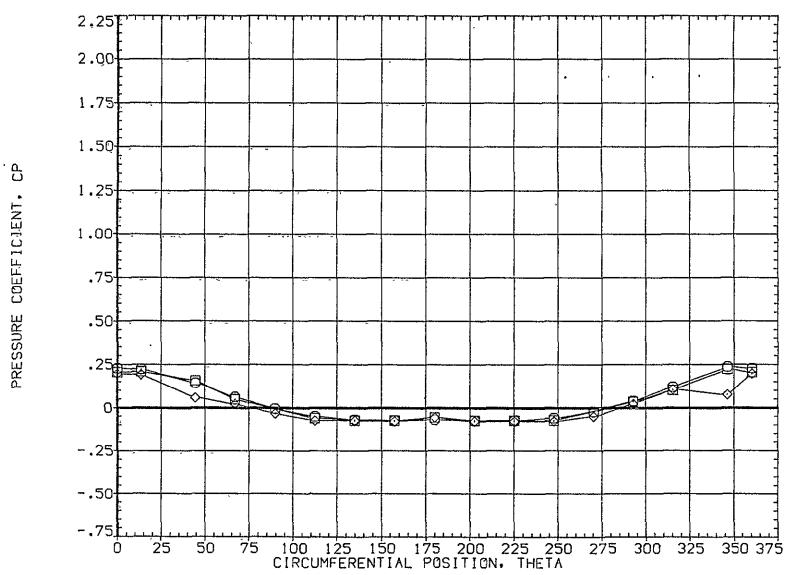


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES. PAGE 1550

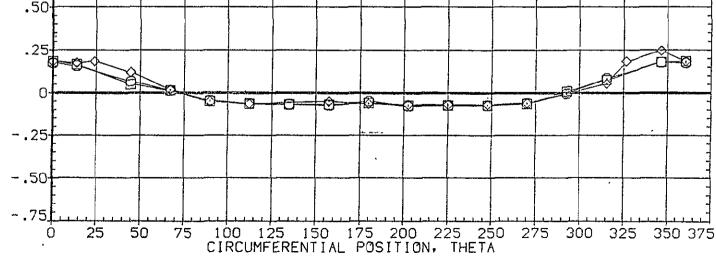


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1551

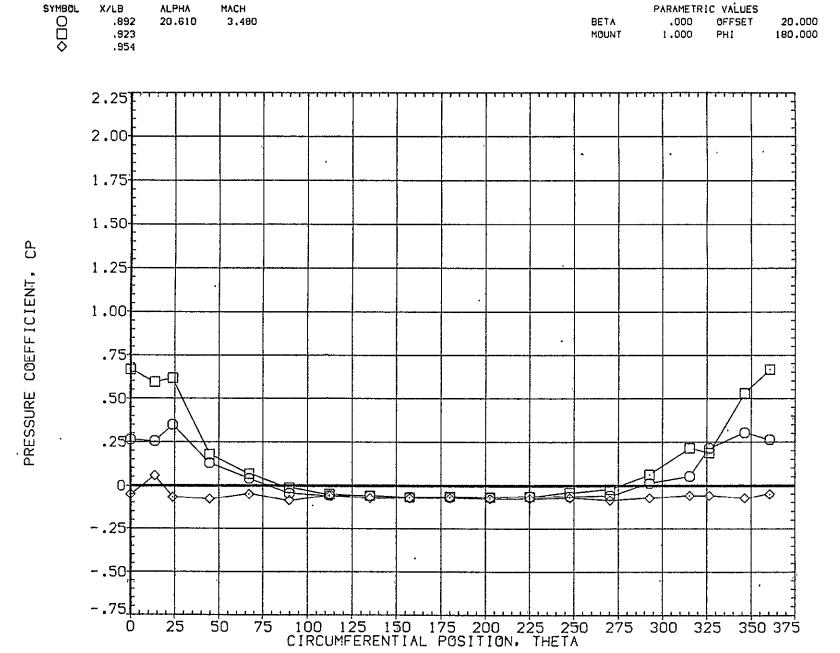


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1552

(P1A039)

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC	VALUES	
9	.055	24.660	3,480	BETA .000	OFFSET	20.000
1 [.108			MOUNT 1.000	PH!	180.000
$\overline{\Diamond}$.162					

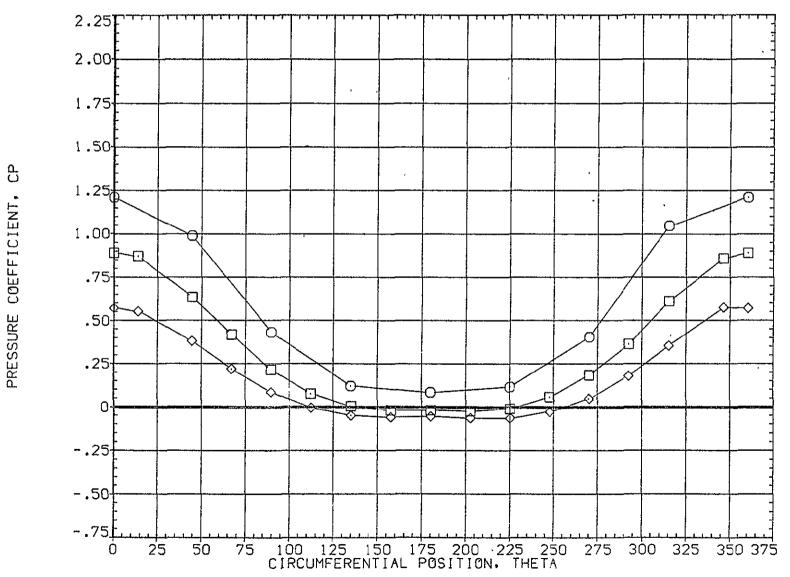
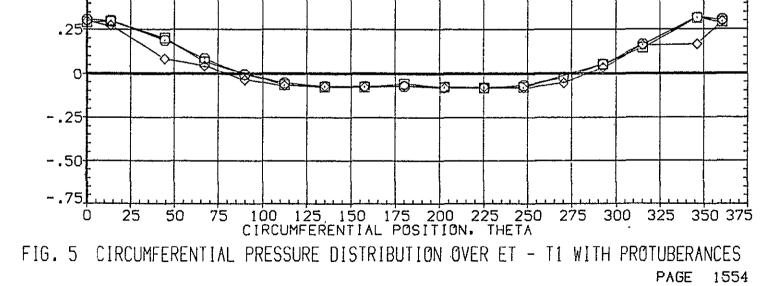


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



X/LB

SYMBOL

ALPHA

MACH

	.610 .735 .860		.660	3.480								BETA	1	000, 000,1	OFFSET PHI	11
2	2.25		, , , , ,	1	 		 	7 1 7 1 1	71111		,,,,	7777	, , , , , ,	 	 	
2	2.00	· ·							:							
1	.75	· · · · · · · · · · · · · · · · · · ·					<u> </u>									
1	.50													,		
1	.25											,				
1	.00															
	.75	<u></u>												,		
	.50															
	.25	-000							1				: 	 	Ô	₽-
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_	.25							<u>V</u>			()					
	.50															
***	.75 <u>F</u>		5 5	50 7	5 1	00 12		50 1	75 2	1	25 25		75 3	00 32	25 350	

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1555



X/LB

.892

ALPHA

MACH

PARAMETRIC VALUES

20.000

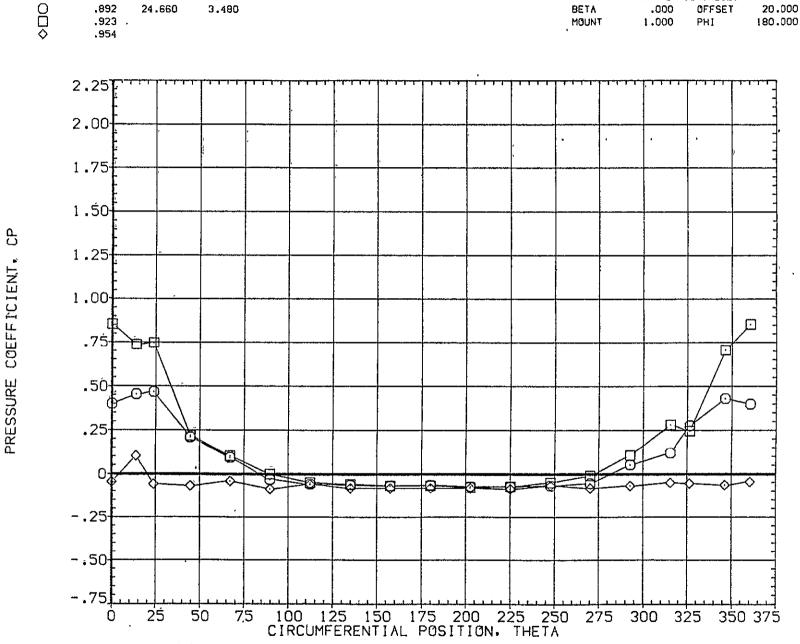


FIG. 5 CIRCUMFÉRENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1556

SYMBOL O O O	.16; .10; .16;	5 28 3	PHA .700	MACH 3.480								AT38 NUUN		ARAMETR .000 1.000	IC VALUES OFFSET PHI	20.000 180.000
	2.25	-	,,,,,	 	 	 			 	 1 1 1 1 1 1 1 1 1 1			 	1171	 	-
	2.00															
	1.75	-														
	1.50-	<u>-</u>														-
	1.25					,										0
	1.00		Q)		
	.75	:												<u> </u>		
	.50														À	> <u>;</u>
			\Sigma	D	6				,					8		1
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	50	•						, ,					<u>`</u>			·
	75 0		5 - 5	0 7	5 10	00 12	25 15		75 20		25 25	50 27	<u> </u>	00 32	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1557

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1558

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.50

50

75



(P1A040)

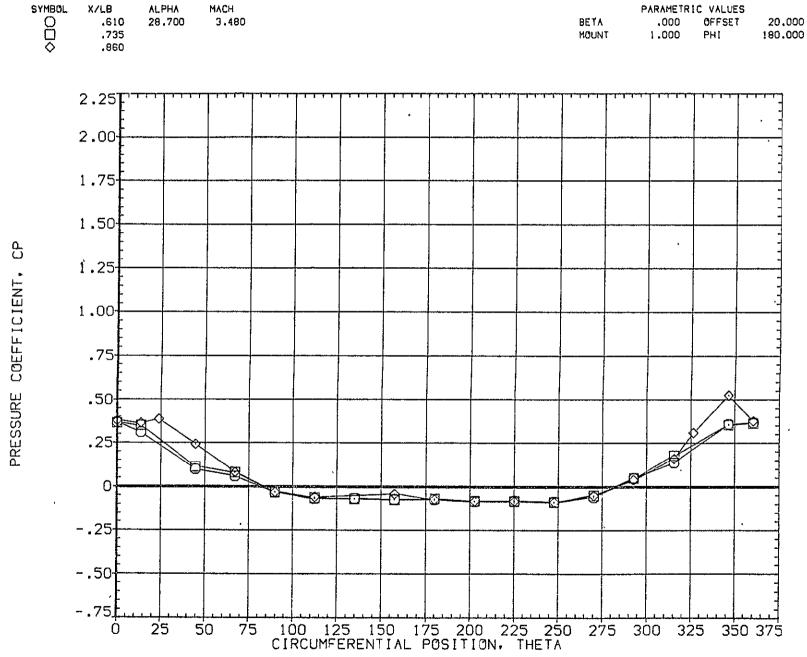


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1559

X/LB

ALPHA

MACH

•	$\overline{}$	4		~		$\overline{}$	•
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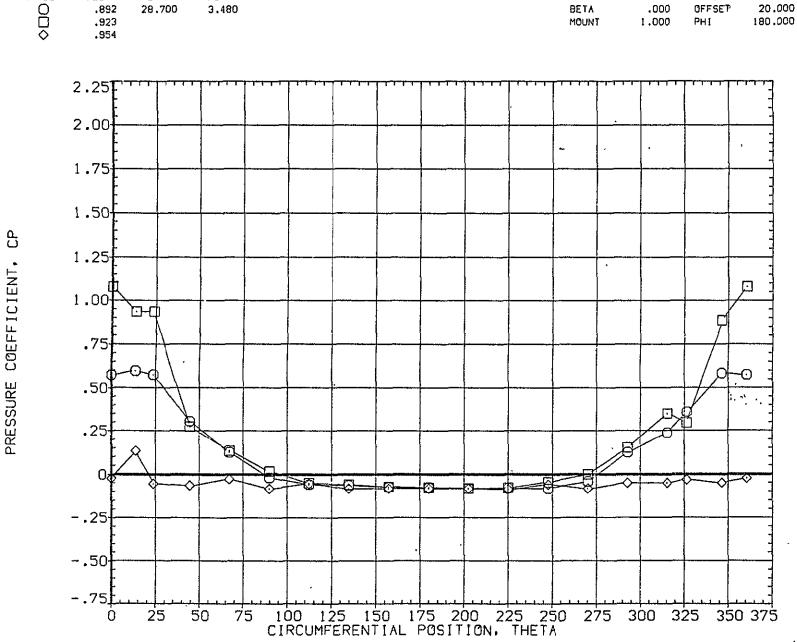


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1560

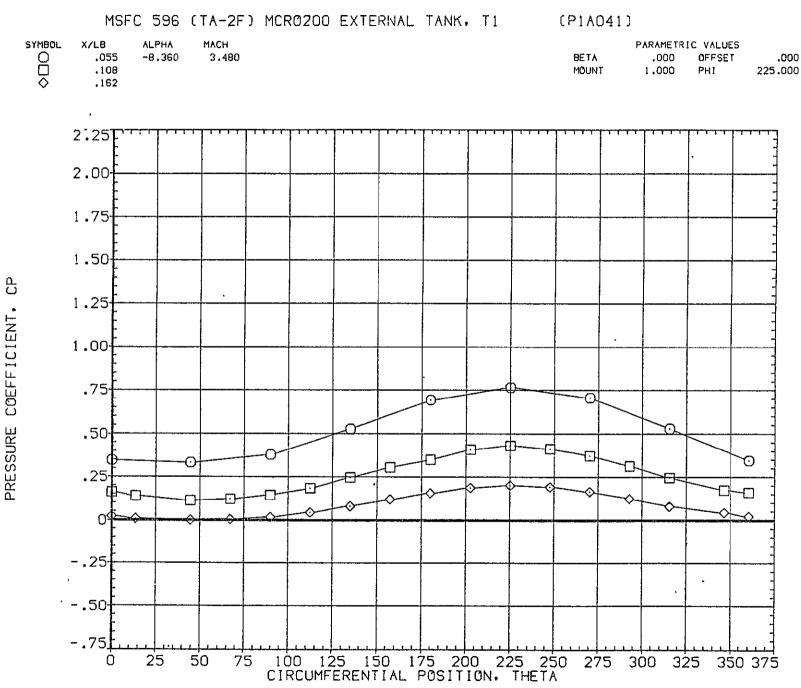


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1561

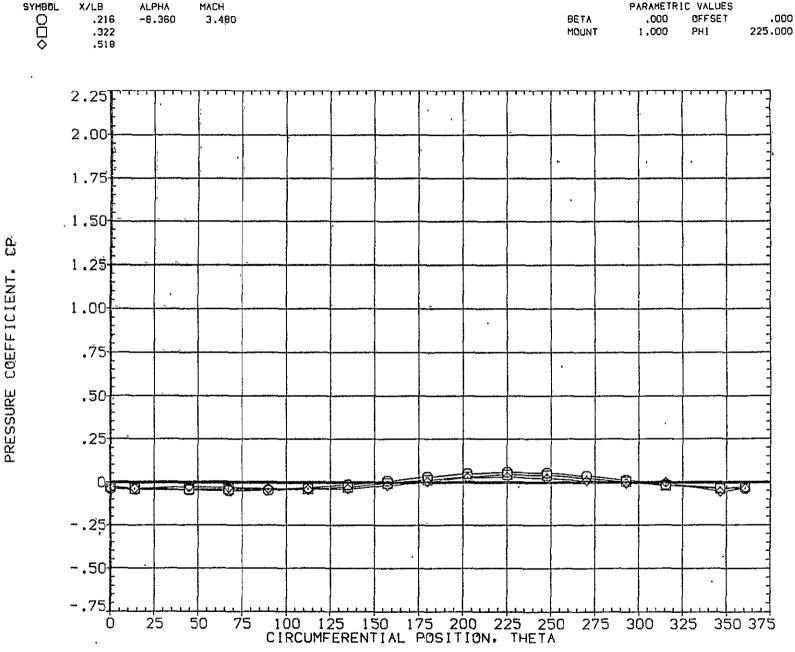
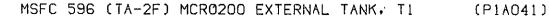


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1562



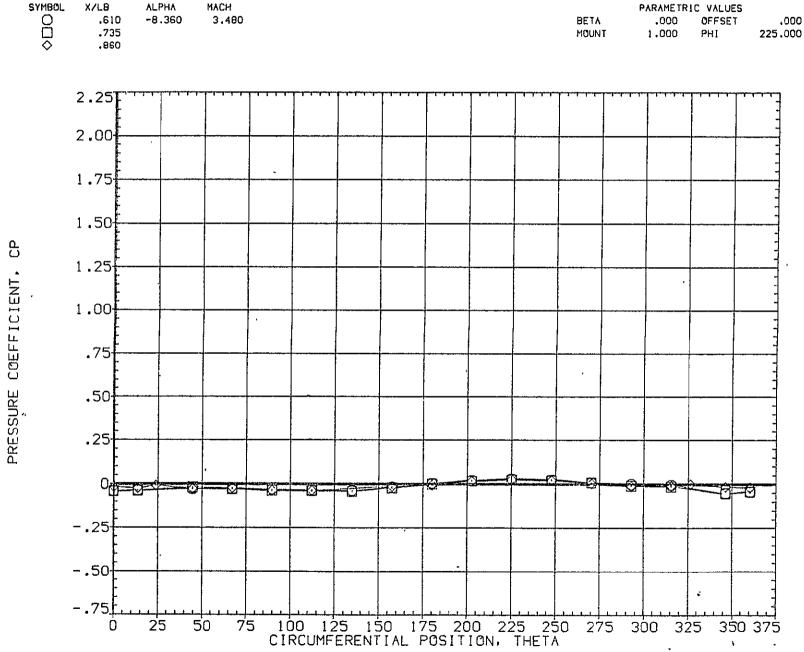


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1563



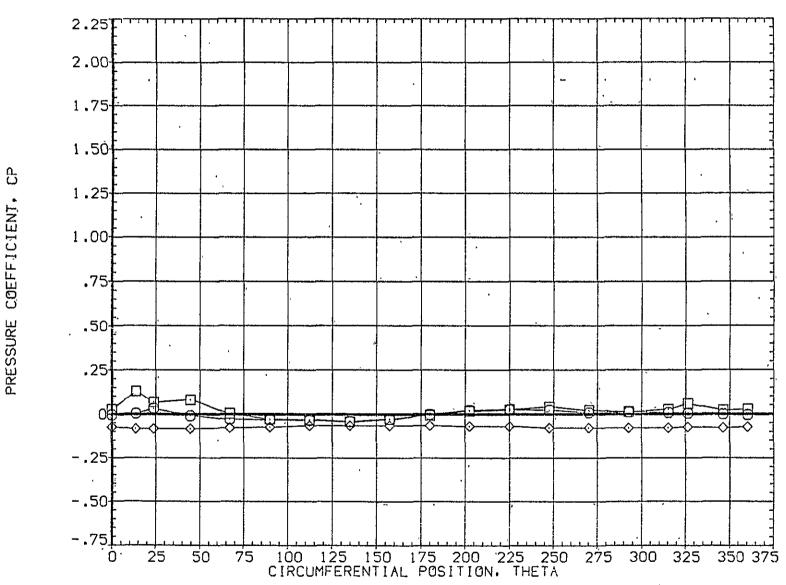


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES.

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A042)

X/LB ·ALPHA MACH
.055 -4.330 3.480 PARAMETRIC VALUES
BETA .000 OFFSET

MOUNT

1,000

.000

225.000

SYMBOL

000

.108

.162

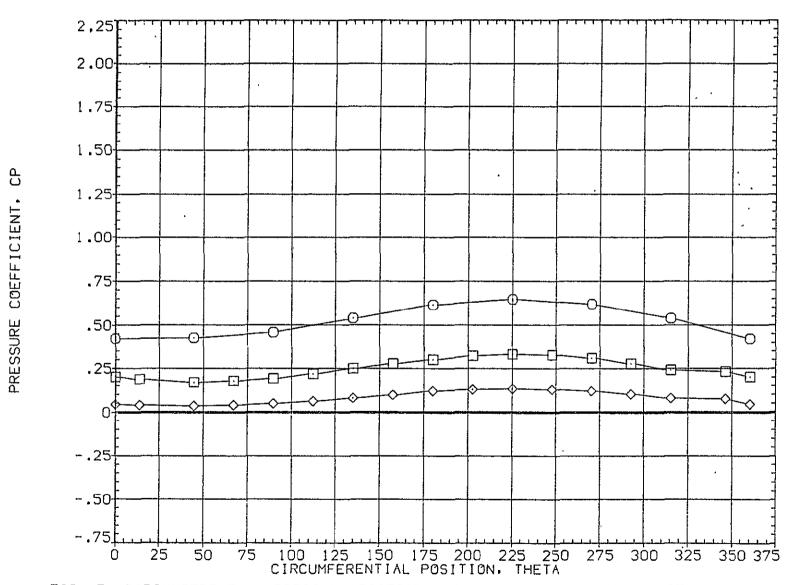


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1565

X/LB

ALPHA

MACH

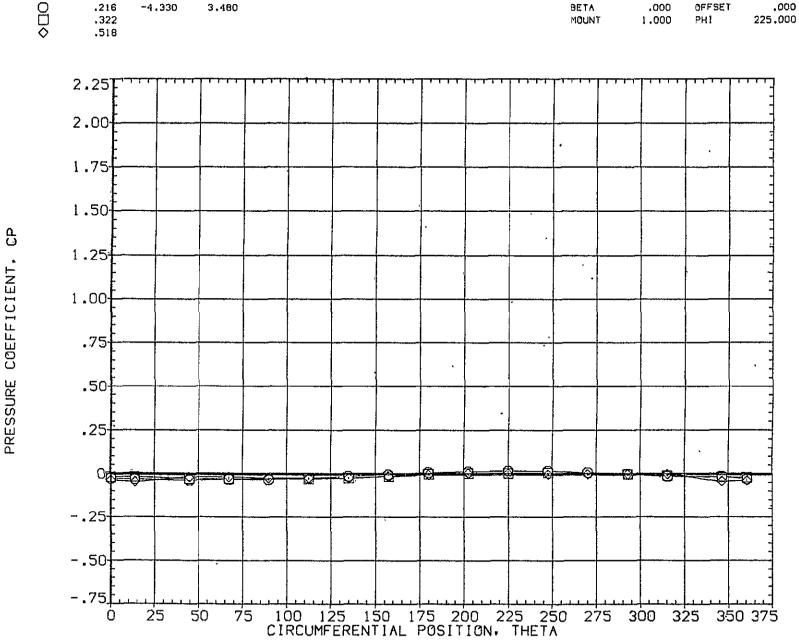


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1566

SYMBOL 'X/LB **ALPHA** MACH PARAMETRIC VALUES 000 -4.330 3.480 .000 OFFSET .000 .610 BETA .735 MOUNT 1.000 PHI 225.000 .860 2:25 2.00 1.75 1.50-S 1.25 COEFFICIENT, 1,00 ٢ 75 PRESSURE .50 .25 -.25- -.50 -.75<u>t</u> 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1567

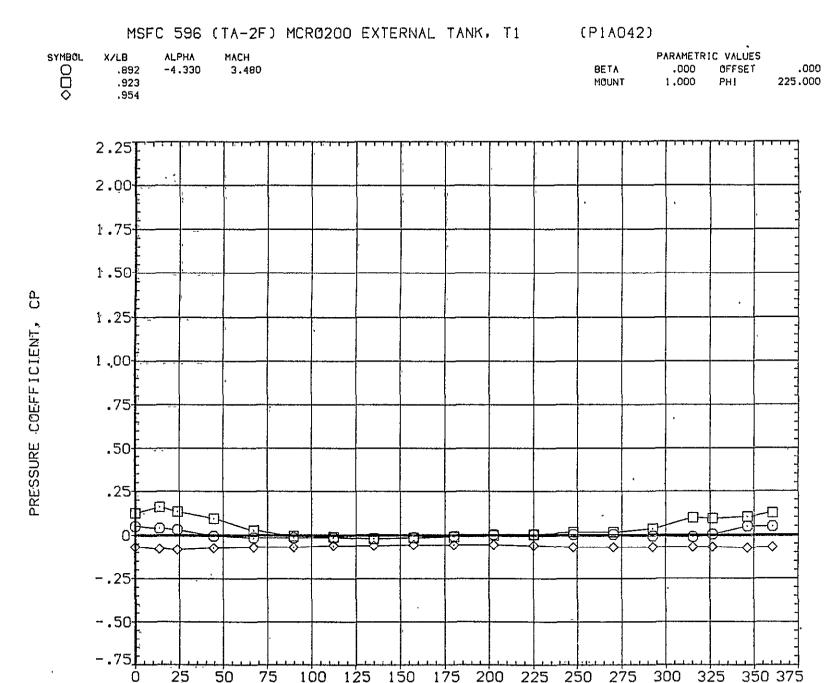


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1568

CIRCUMFERENTIAL POSITION, THETA.

50

75



SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	
O	.055	280	3.480	BETA .000 OFFSET	.000
	.108			1.000 PHI	225.000
\Diamond	.162				

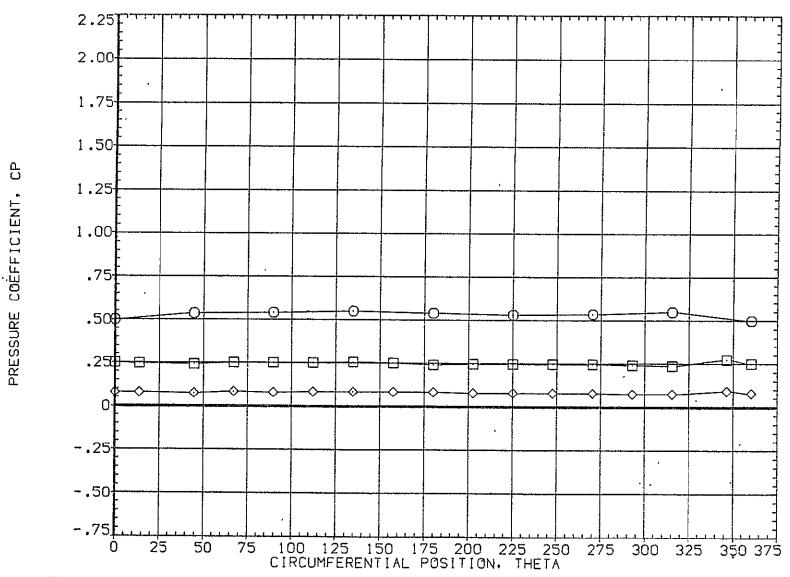


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



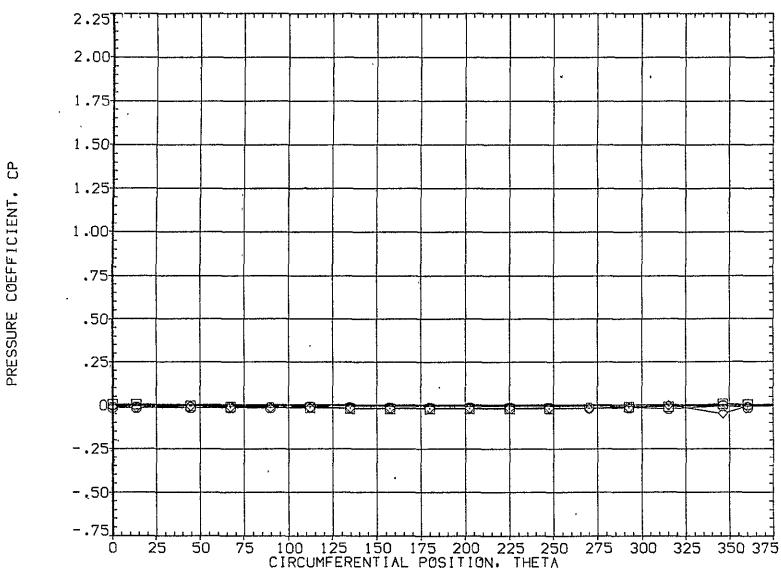


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1570

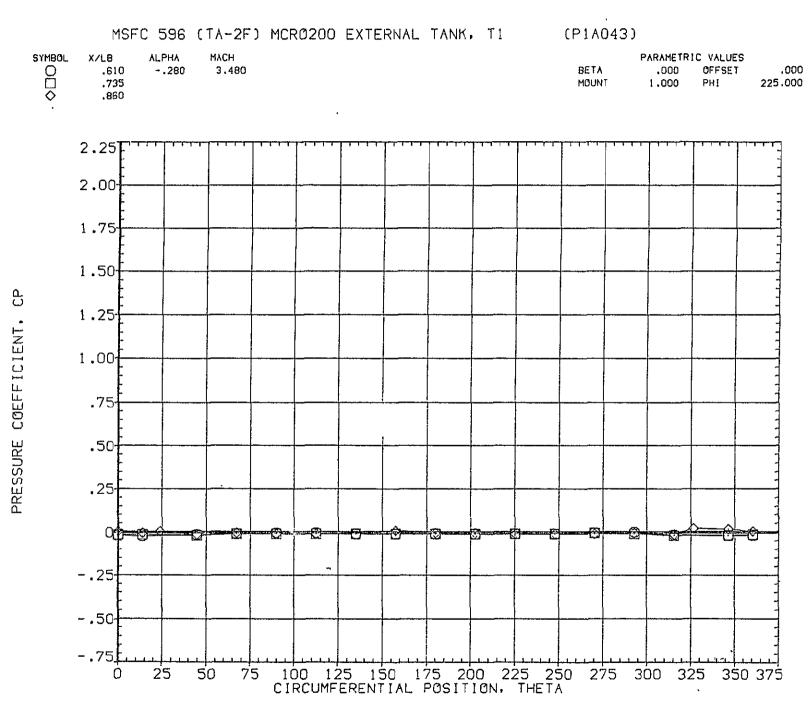


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANÇES

PAGE: 1571

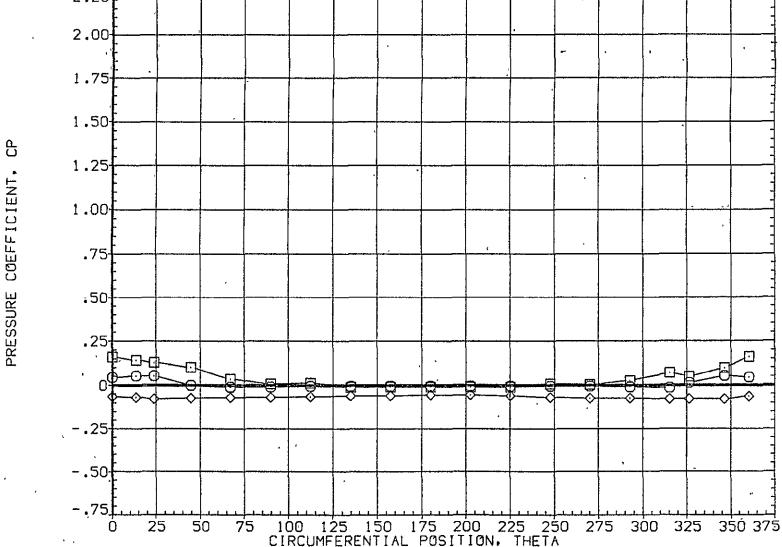


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1572

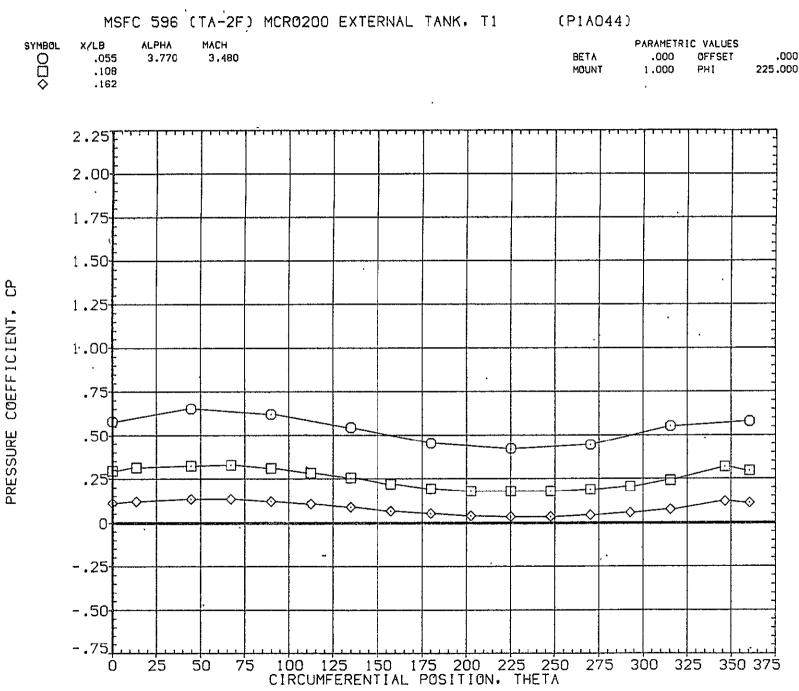


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1573

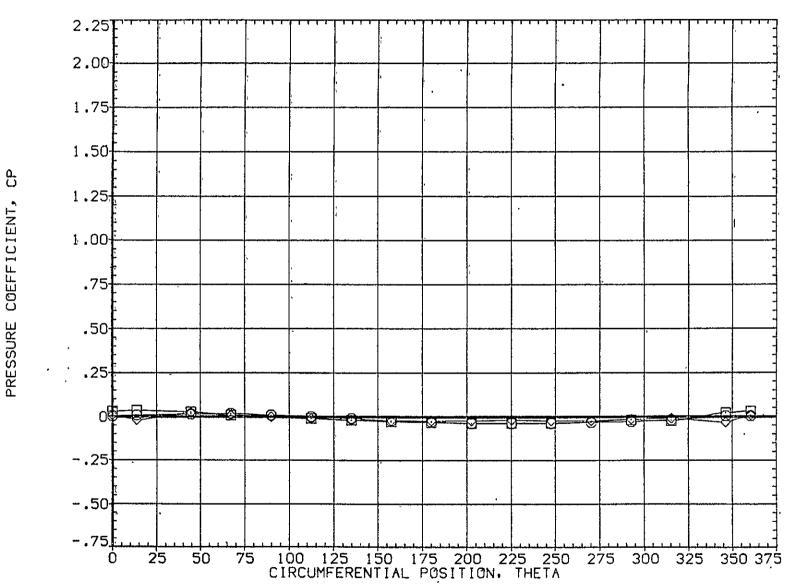


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1574

SYMBOL O O X/LB **ALPHA** MACH PARAMETRIC VALUES 3.480 3,770 .610 BETA .000 OFFSET .000 .735 MOUNT PHI 1.000 225.000 .860 2.25T 2.00 1.75 1.50 ဌ 1.25 COEFFICIENT. 1.00-.75· PRESSURE .50 .25 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA 25 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1575

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1576

CIRCUMFERENTIAL POSITION, THETA

50

75

25

Ò

100 125 150 175 200 225 250 275 300 325 350 375

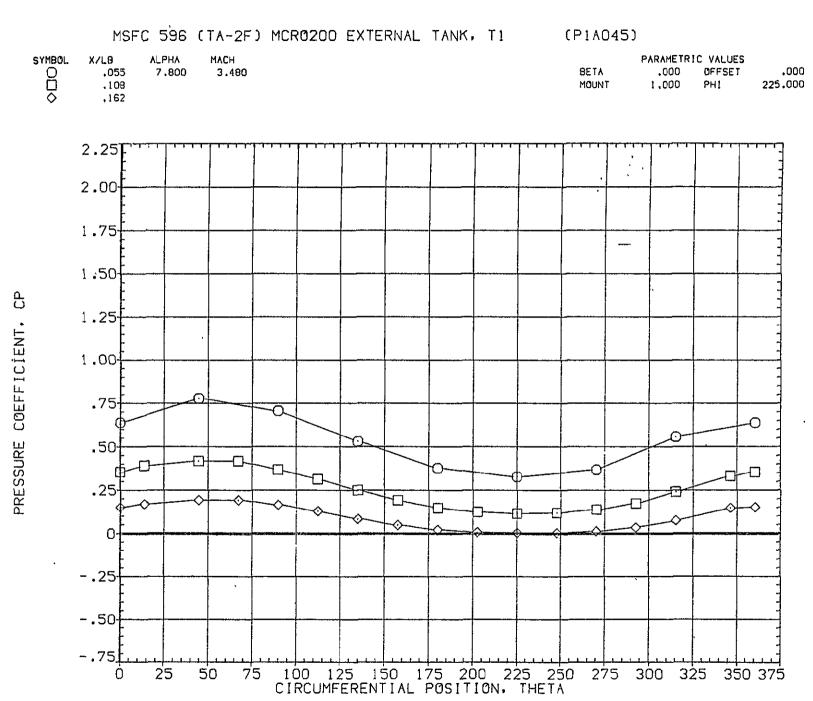


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1577





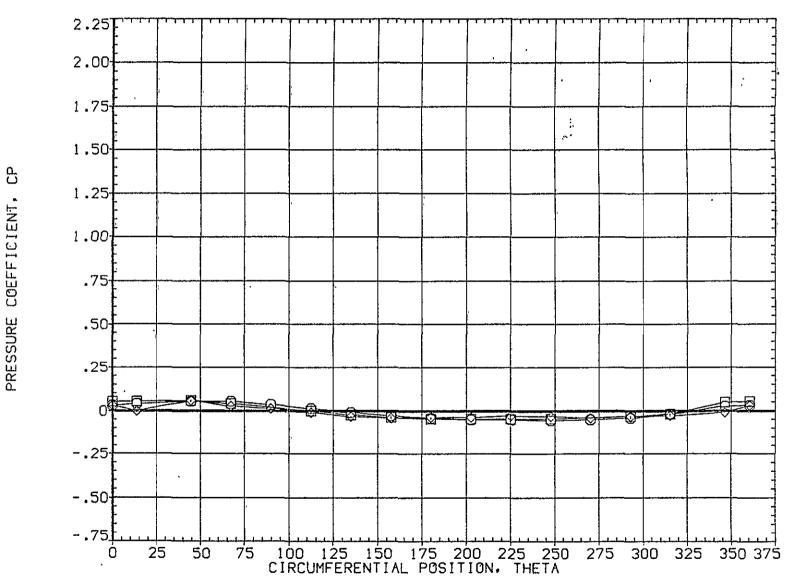
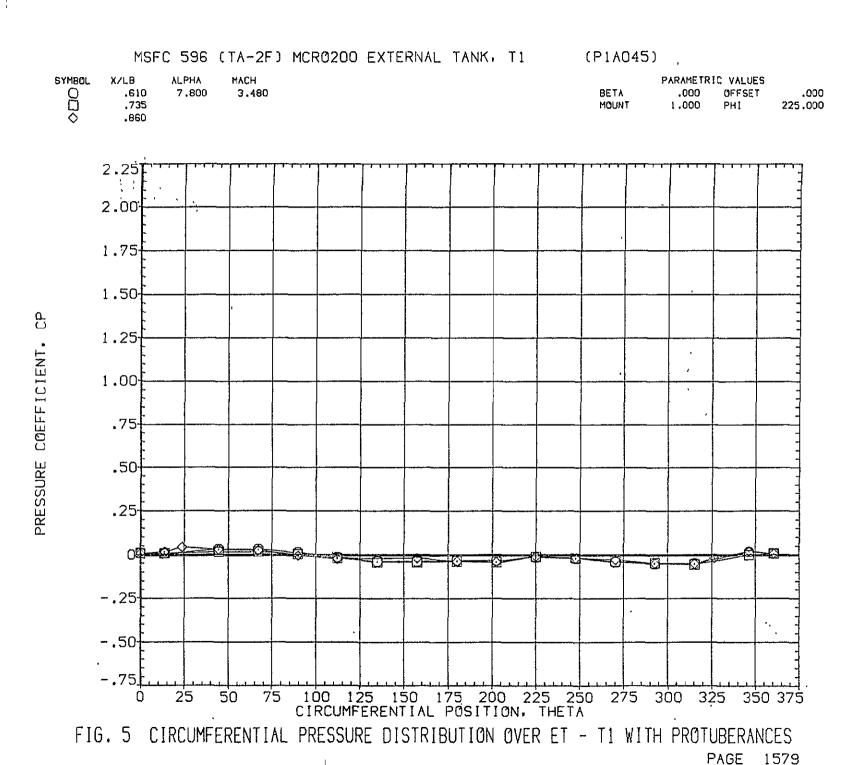
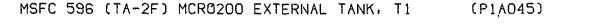


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1578







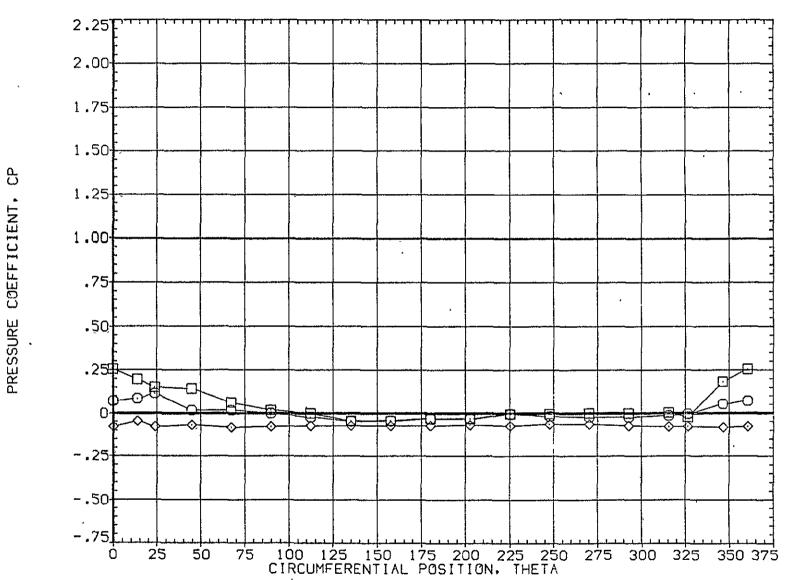


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1580

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1581

MCEC	500	(TA - 2C)	MCDMOOO	EXTERNAL	TANK	T 1	
mart.	JJb	ししハーストリ	PICKUZUU	EX LEKINAL	I A IVIA	1.1	

0

X/LB

-.50

-.75

25

50

75

100 125

.216

ALPHA

12.520

MACH

3.480

j >	.322 .518	12.52	•	3.400								MOUN	Ŧ	1.000	PHI	:
2.	ت [25	-: -	· · · · ·	••••	~, , , , , ′	 	 1-1-1-1-	 	, , , , ,	7-1-1	 	 	, , , , ,	,,,,, ,,	 	11
2.	00 -				, <u>, , , , , , , , , , , , , , , , , , </u>				,							
1.	75															
1.	50			'												
1.	25															<u>.</u>
1	00				-											
	75		-	<u></u>												
•	50															
	25	,		_												
		8		\$	-	-0-	-Ø	O	Ø	3 - (10	-8	= ₽
	25	·														

(P1A046)

BETA

PARAMETRIC VALUES

275 300 325 350 375

.000

OFFSET

20,000

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1582

CIRCUMFERENTIAL POSITION. THETA

150

175 200 225 250

(P1A046)

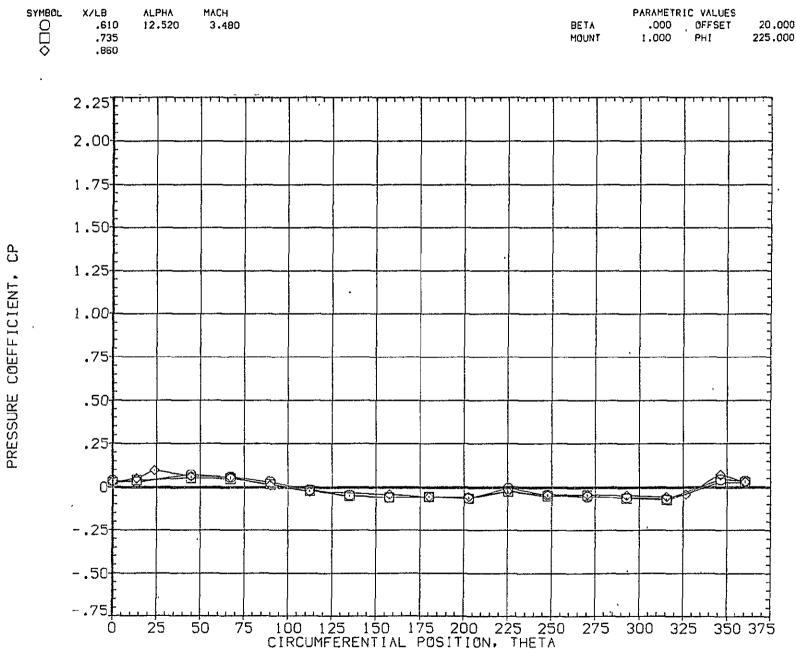


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1583

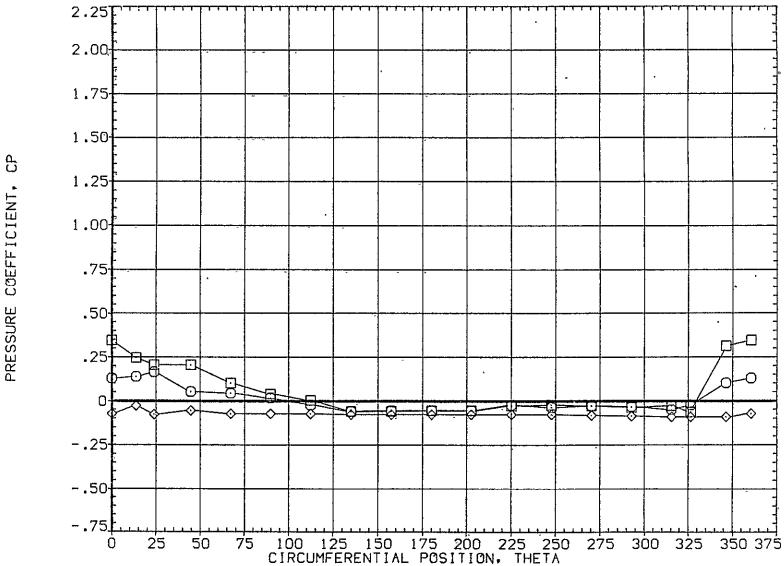


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1584

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1585

50

75

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

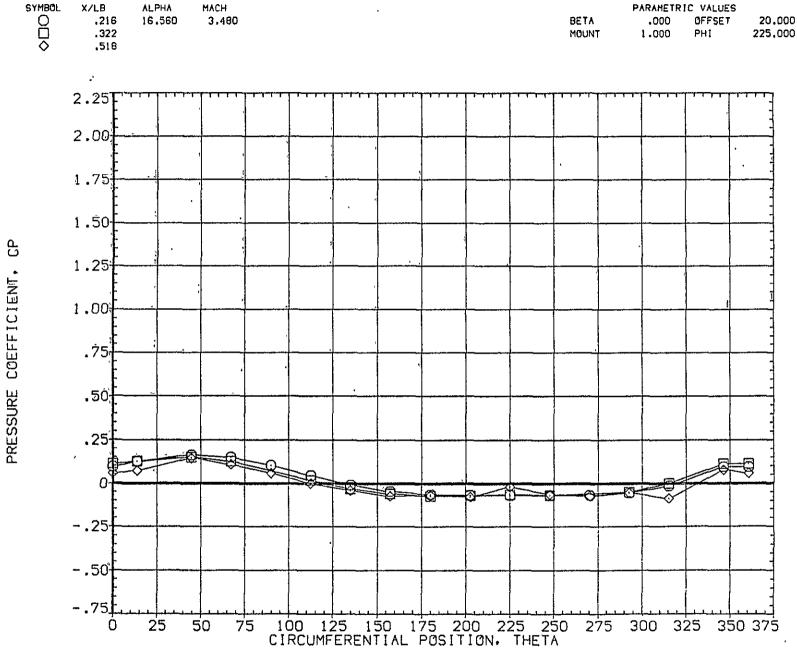


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1586

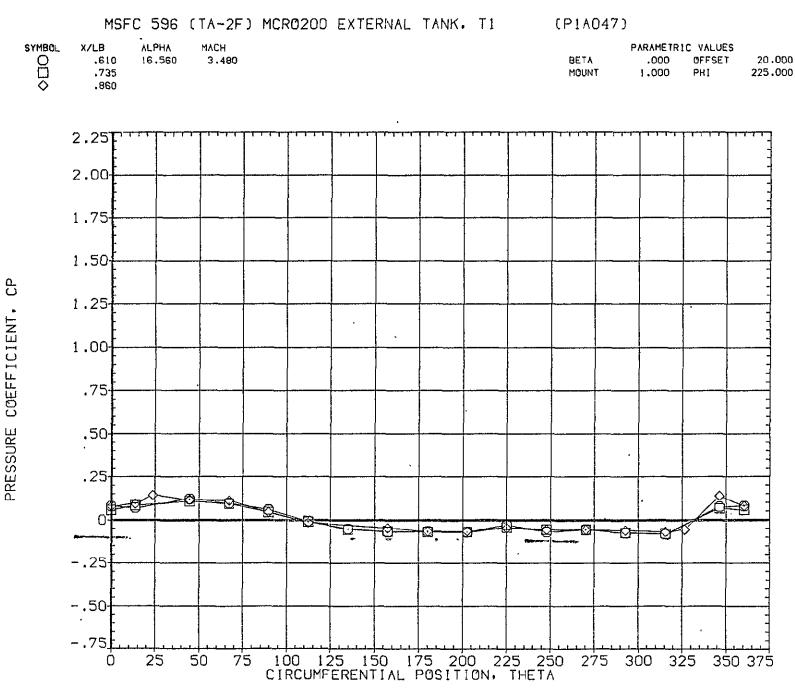


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

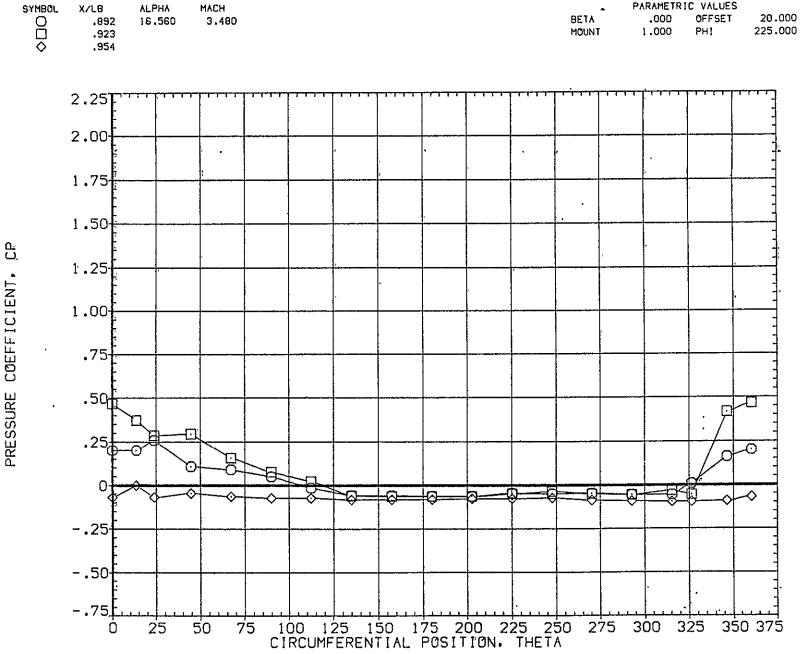


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1588

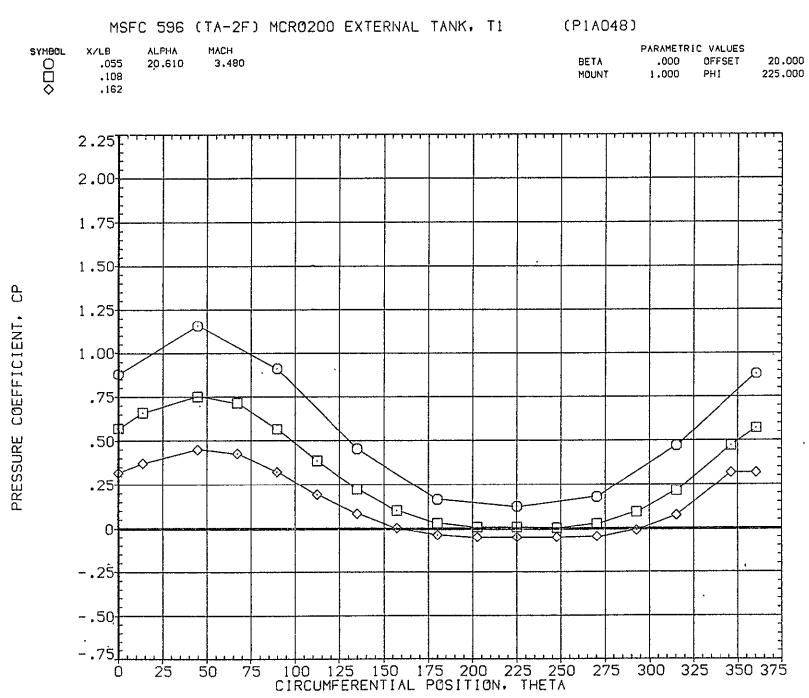


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1589

X/LB

ALPHA

MACH

PARAMETRIC VALUES

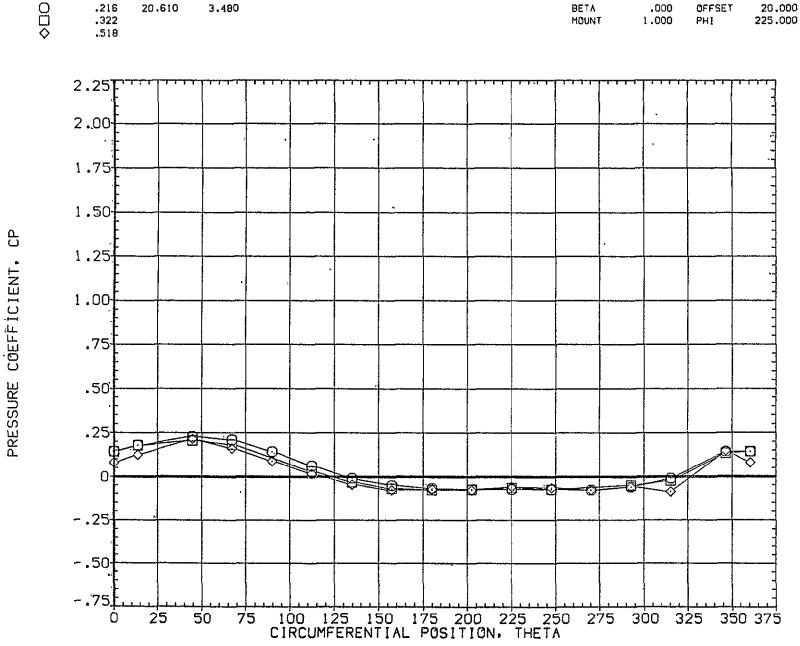


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1590

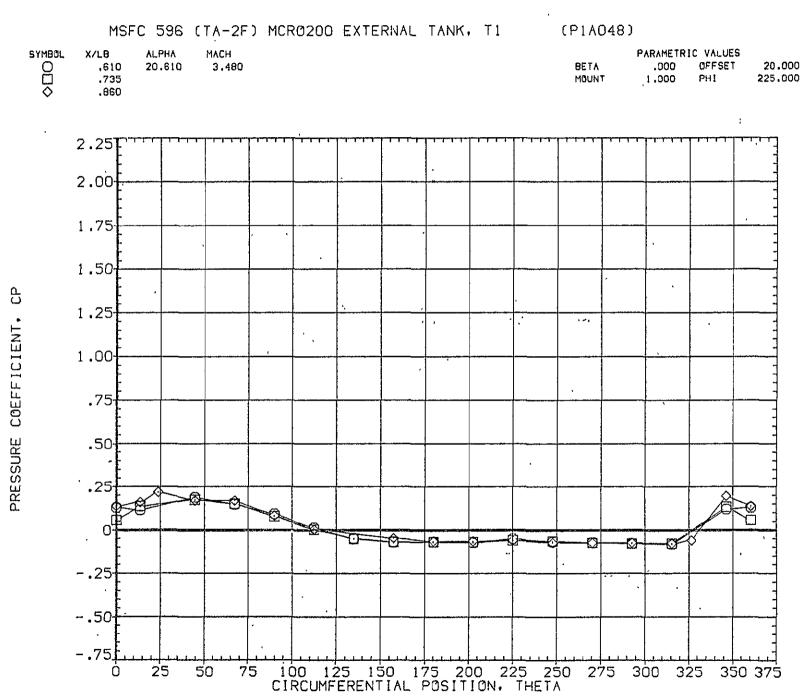


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

X/LB

.892

ALPHA

20.610

MACH

3.480

BETA

PARAMETRIC VALUES

OFFSET

20.000

.000

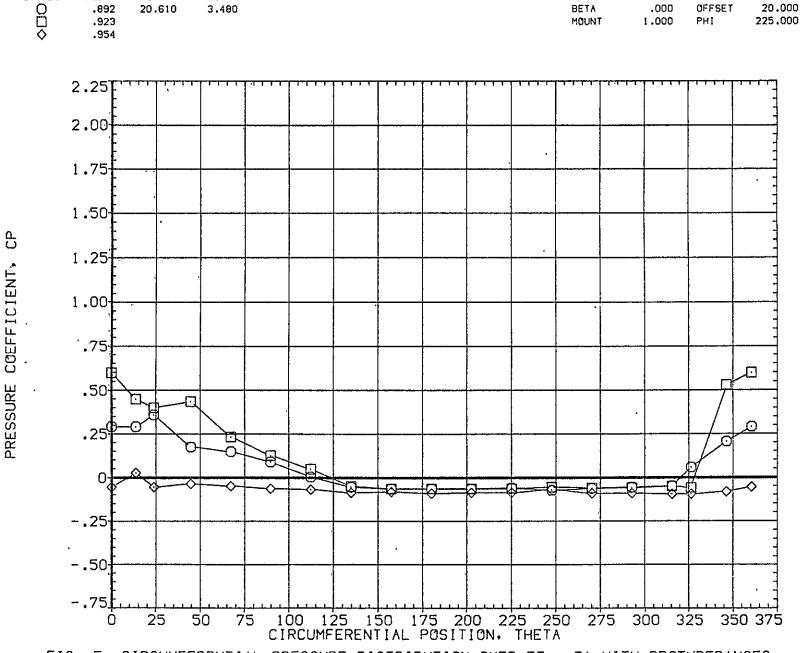


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1592

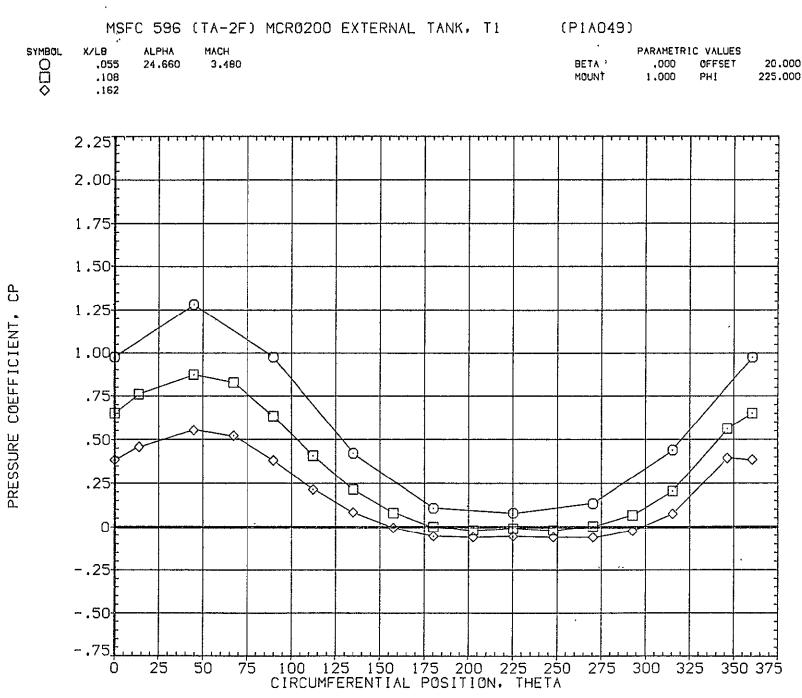


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1593

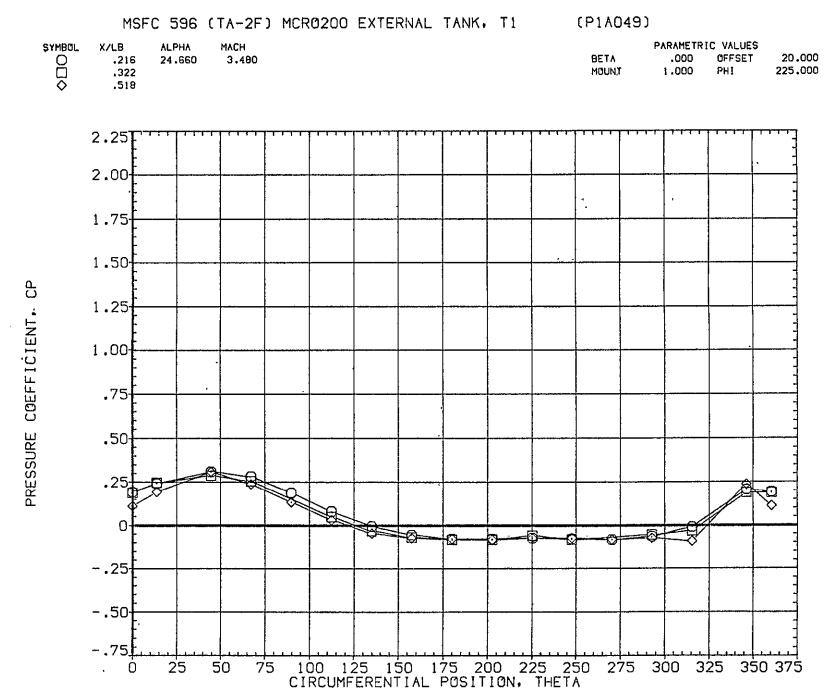


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1594

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1595

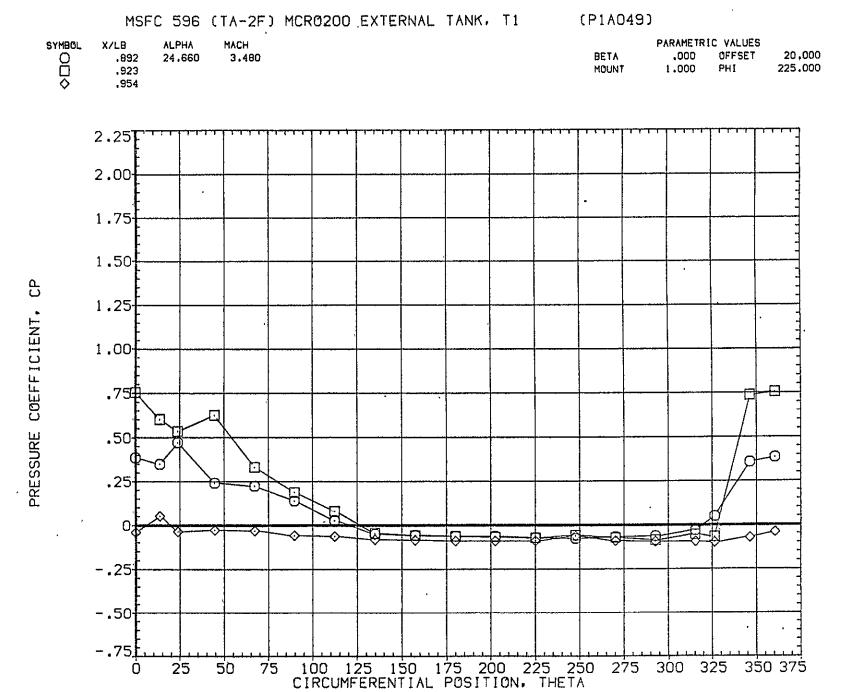


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1596

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	
Q	.216	28.720	3.480	BETA .000 OFFSET	20.000
	.322			IH9 000,1 TAUDM	225.000
\Diamond	.518				

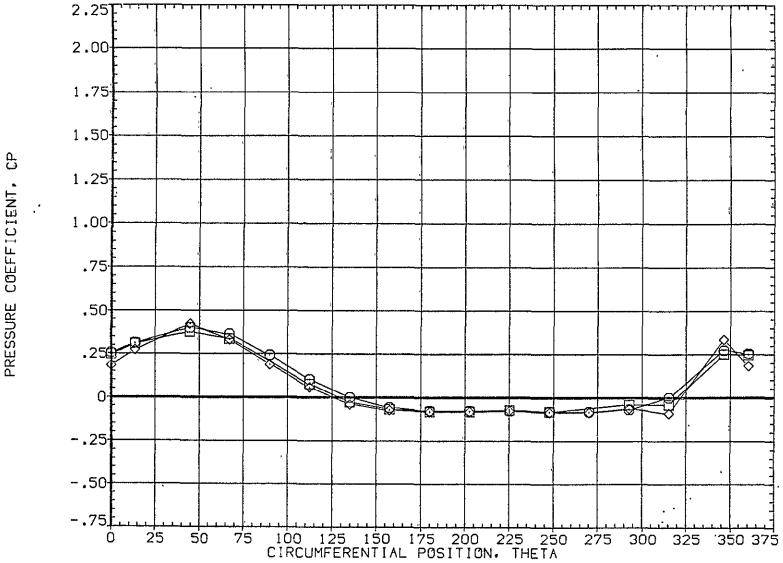


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1598

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1599



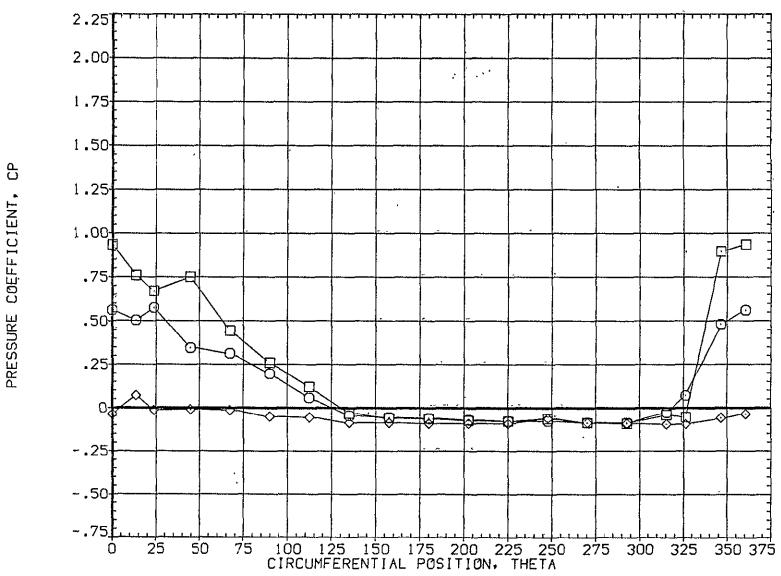


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1600

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1601

25

50

75

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

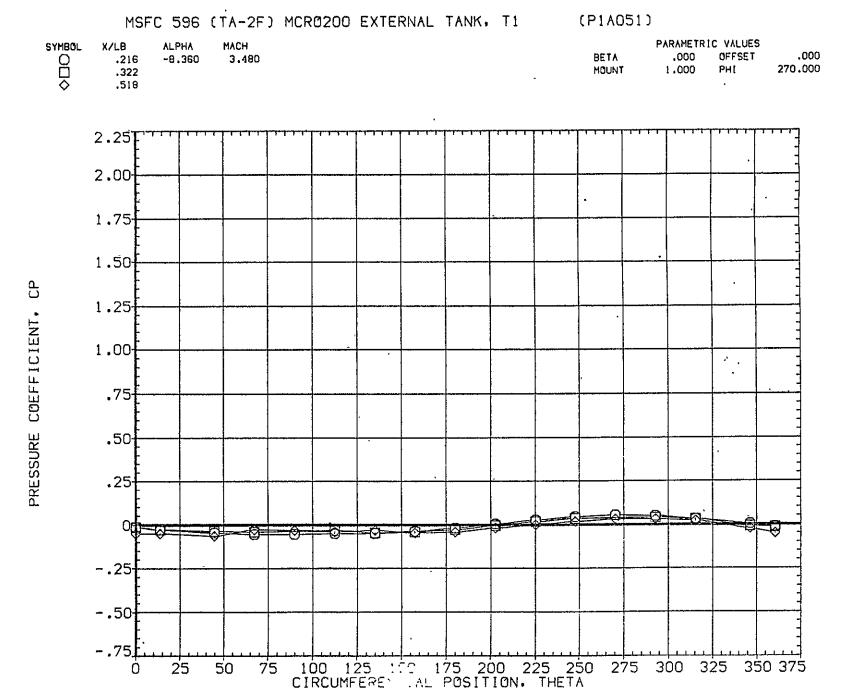


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET. - TI WITH PROTUBERANCES
PAGE 1602

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1603

X/LB

ALPHA

MACH

PARAMETRIC VALUES

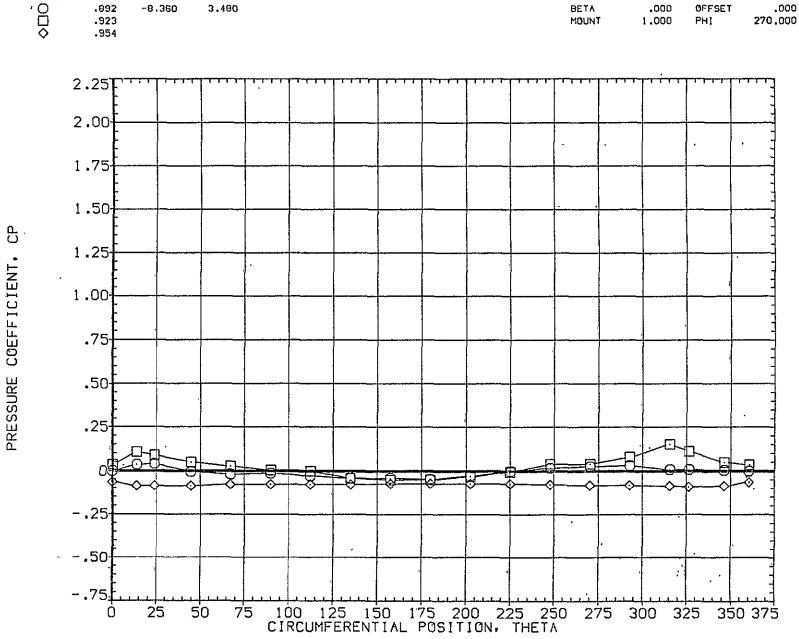


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1604

MSEC	596	(TA-2F)	MCRM200	EXTERNAL	TANK.	T 1	(P1A052)
1131 6	J J J	CIN ZIJ	11010200		1 / / / / / / /	1 1	いしい

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	
0	.055	~4.330	3.490	BETA .000 OFFSET	.000
Ĭ	.108			MOUNT 1,000 PHI	270.000
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	.162				

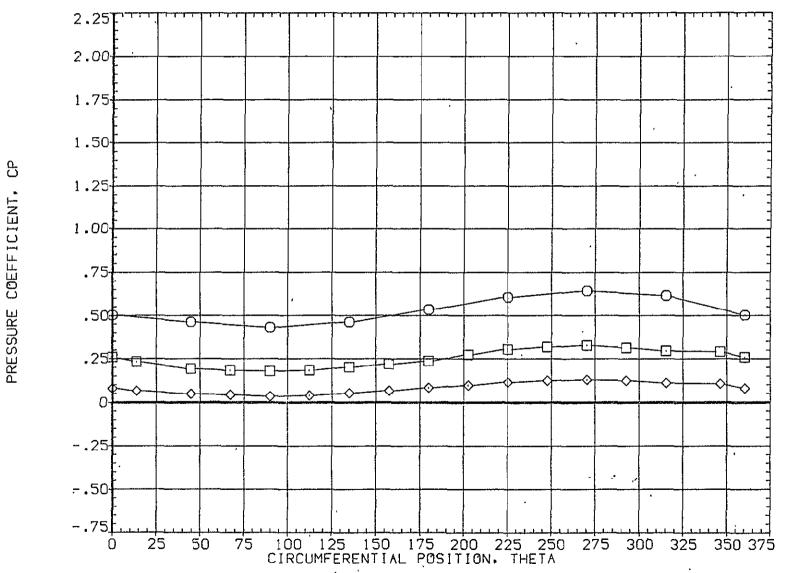


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1605

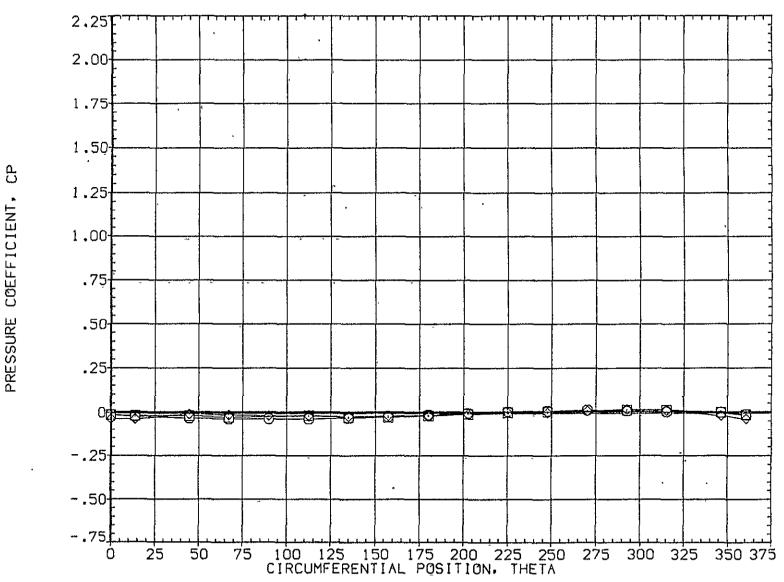


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1606

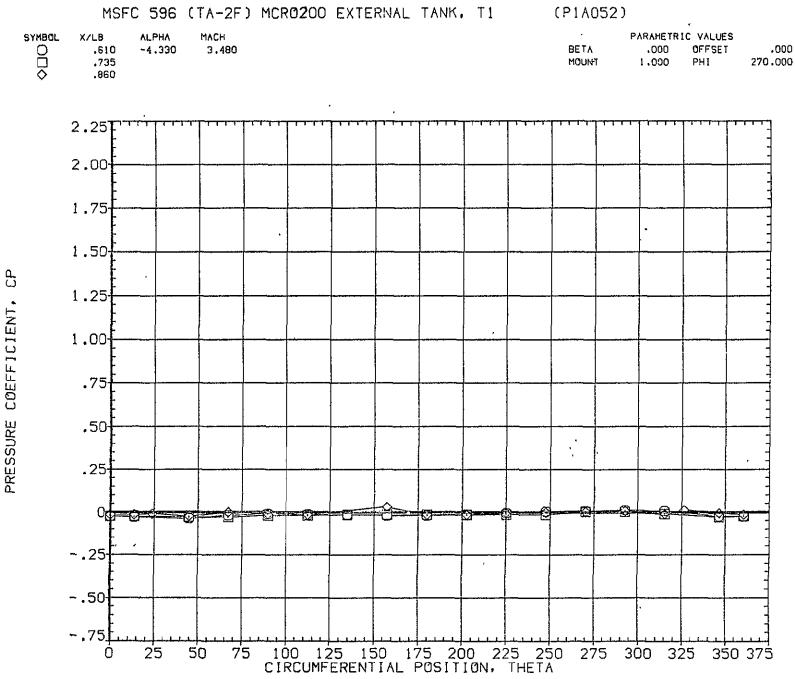


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1607

(P1A052)

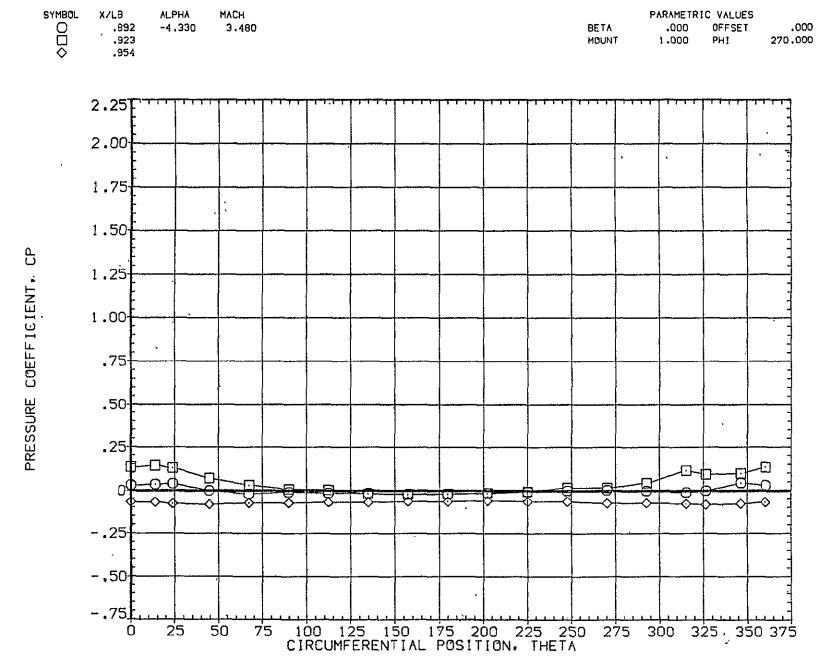


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1608

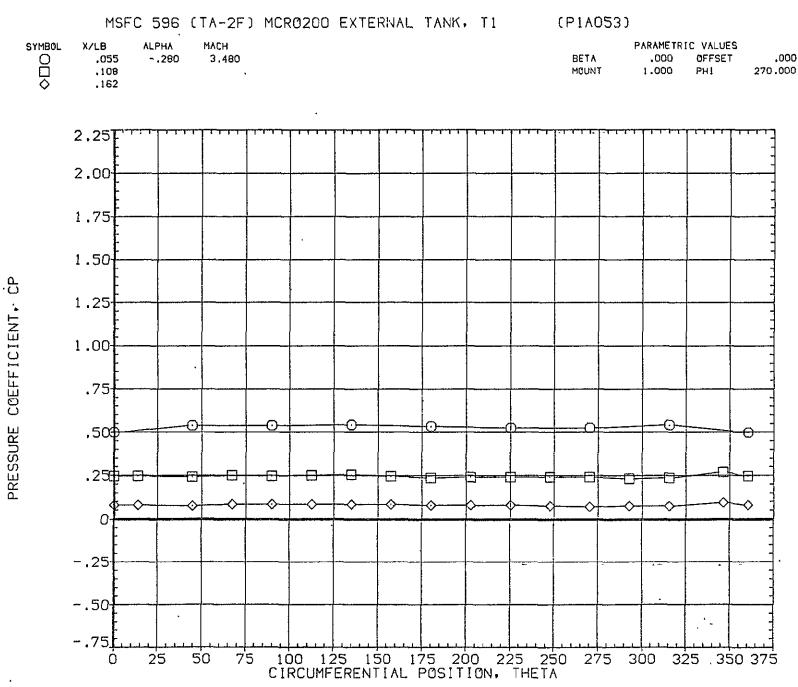


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1609

X/LB

.216

ALPHA

-.280

MACH

3.480

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

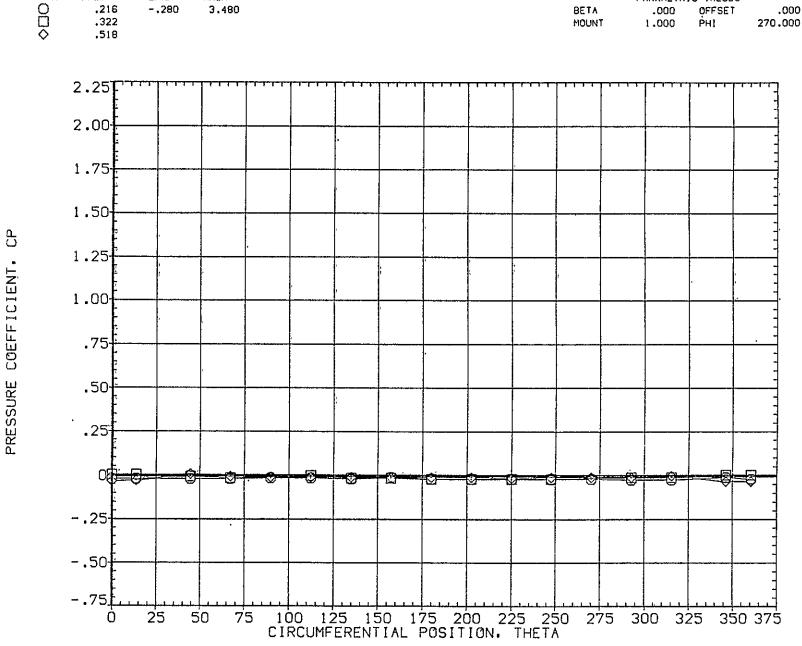


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1610

MSEC	596	(TA-2F)	MCRAZOO	EXTERNAL	TANK.	T 1
HOLL	JJD	しょハニスにょ	TILITUZBU		1 //1/1/1/	1 1

(P1A053)

SYMBOL O O	X/LB .610 .735 .860	ALPHA 280'	MACH 3.480								BETA MOUN		000 1.000	IC VALUES OFFSET PHI	.00 270.00
	2.25 T	, , , , , , , , , , , , , , , , , , , 	}		 1 1 1 1 1 	, , , , , , , , , , , , , , , , , , , 	 	 	 -		, , , , , , , , , , , , , , , , , , , 	 	 	,,,,,,,	
	2.23]
	2.00						 					 -			
	1.75				 										
	1.50														
	1.25			<u> </u>											
	1.00												<u> </u>		
	.75			····-						<u> </u>					
	.50			··-											
	.25														
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	50														
	75 0	25 5	50 75	5 10	00 12			_ lll _ l _ l		25 25	1.1.1.1	⁷⁵ 3		25 35C	

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

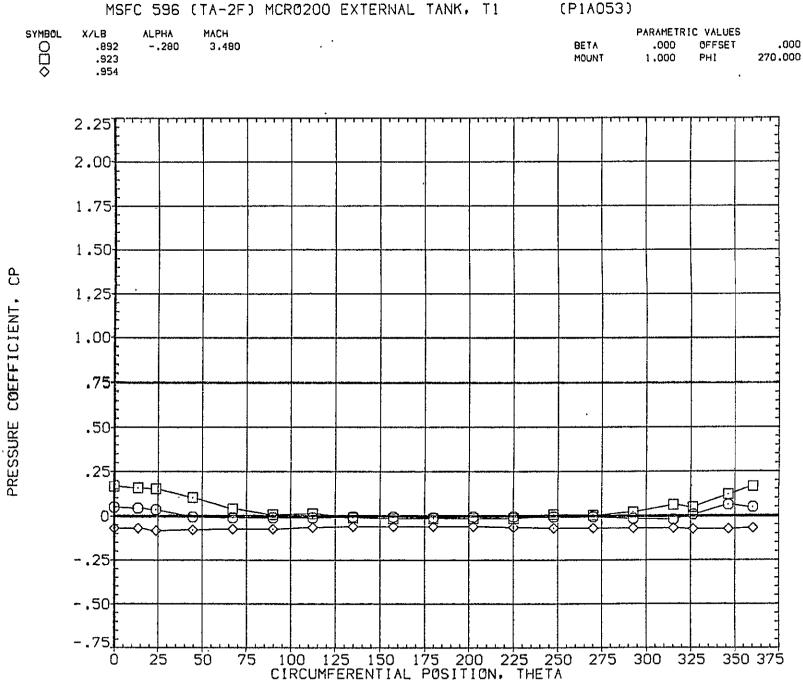


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1612

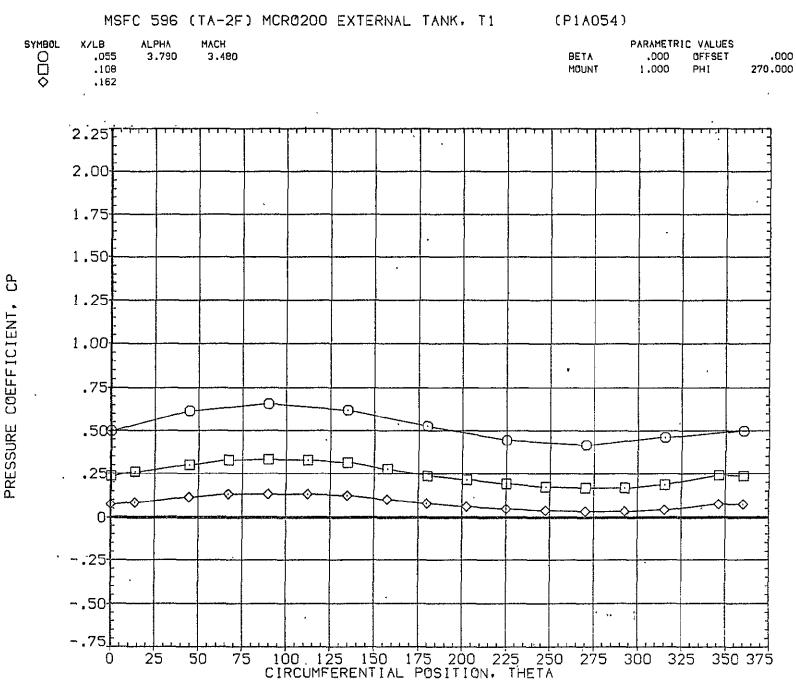


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1613

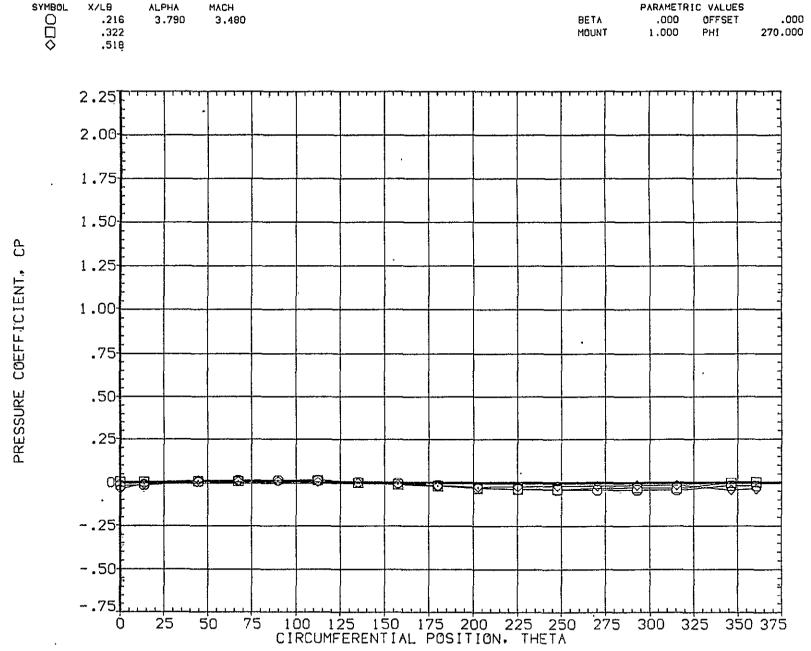


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1614

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1615

SYMBOL

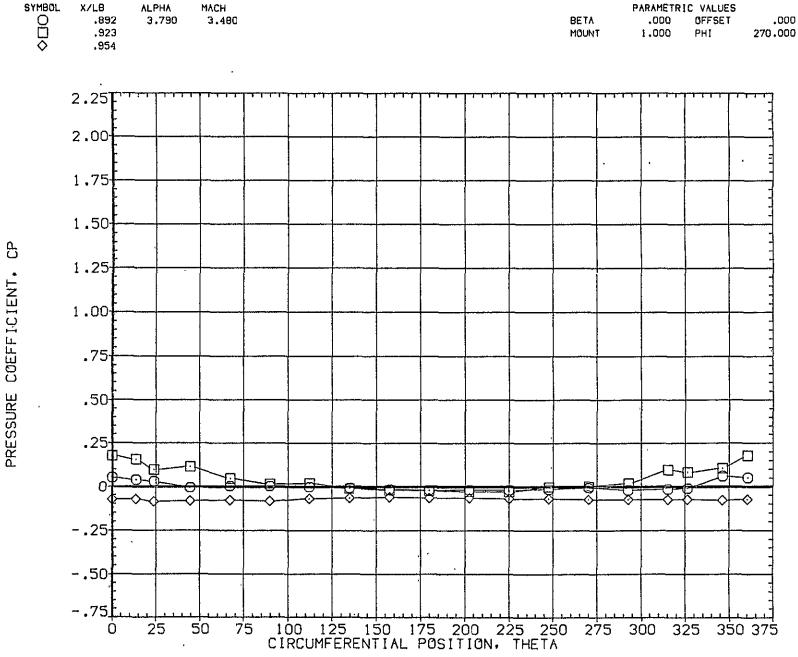


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1616

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	
0	.055	7.800	3.480	BETA .000 OFFSET	.000
Ō	.108			I.OOO PHI	270.000
$\overline{\Delta}$	162				

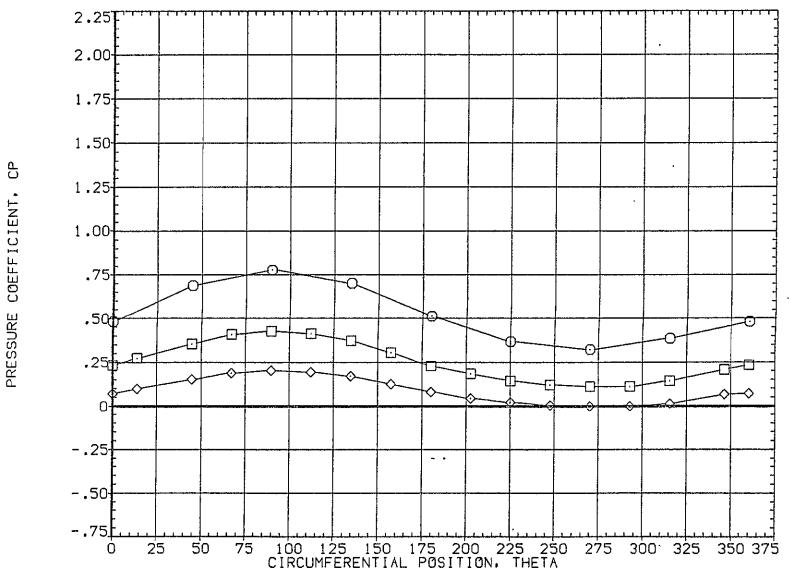


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

.518

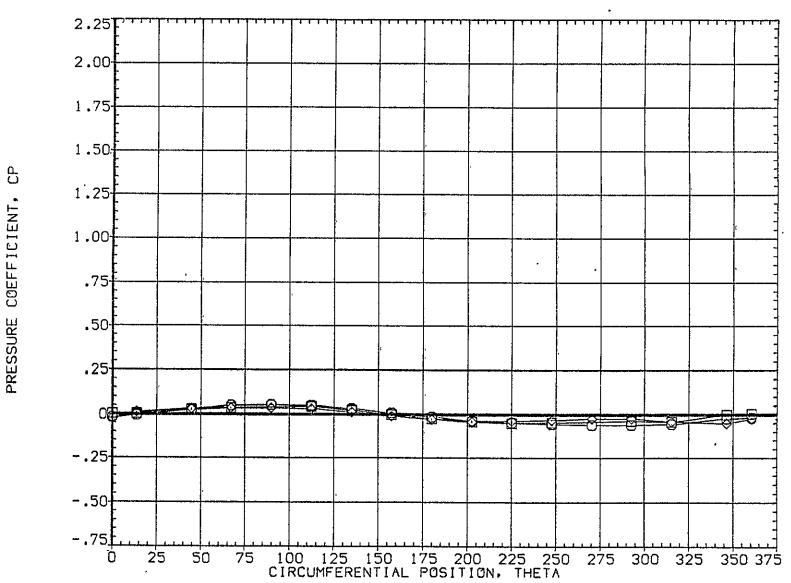


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1618



SYMBOL	X/LB	ALPHA	MACH			PARAMETR	IC VALUES	
0	.610	7.800	3.480		BETA	.000	OFFSET.	.000
ă	.735				MOUNT	1.000	PHI	270.000
\Diamond	.860							

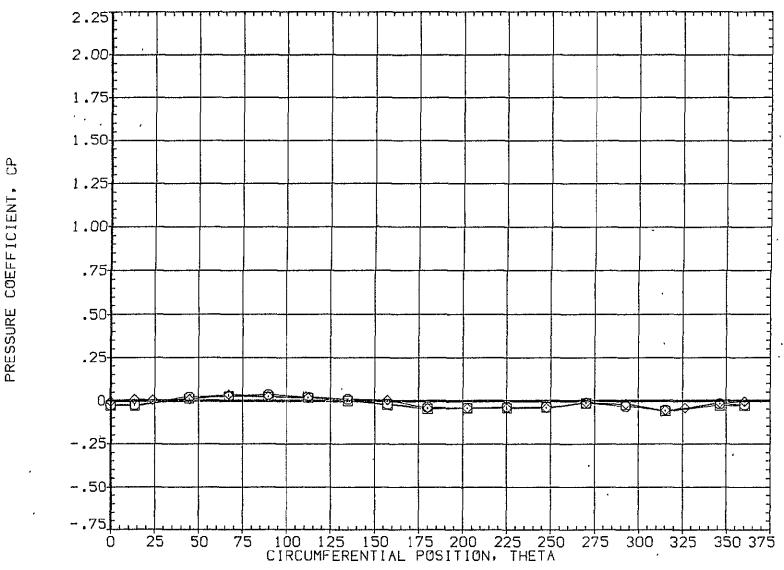
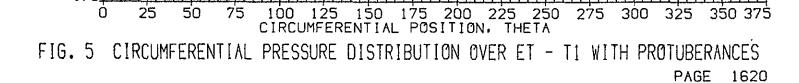


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1619



-.25

- .50

-.75

50

SYMBOL.	X/LB	ALPHA	MACH	PARAMETR	IC VALUES	
0	.055	12.520	3,480	OOO. ATBE	OFFSET	20.000
Image: Control of the	.108			000,1 TNU0M	PHI	270.000
^	162					

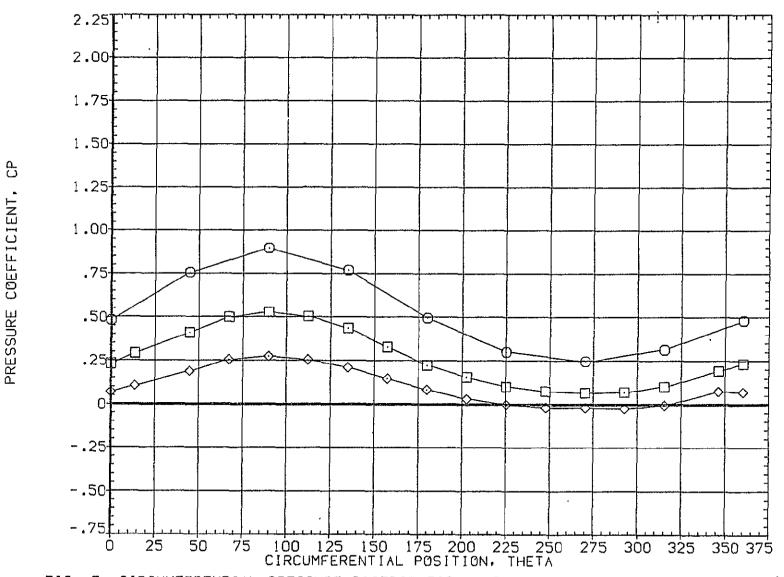


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

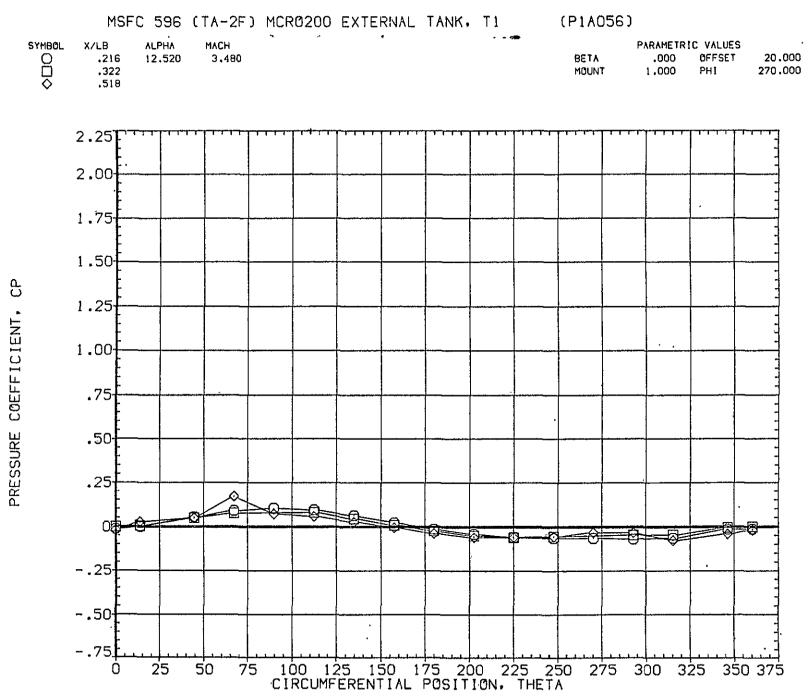


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1622

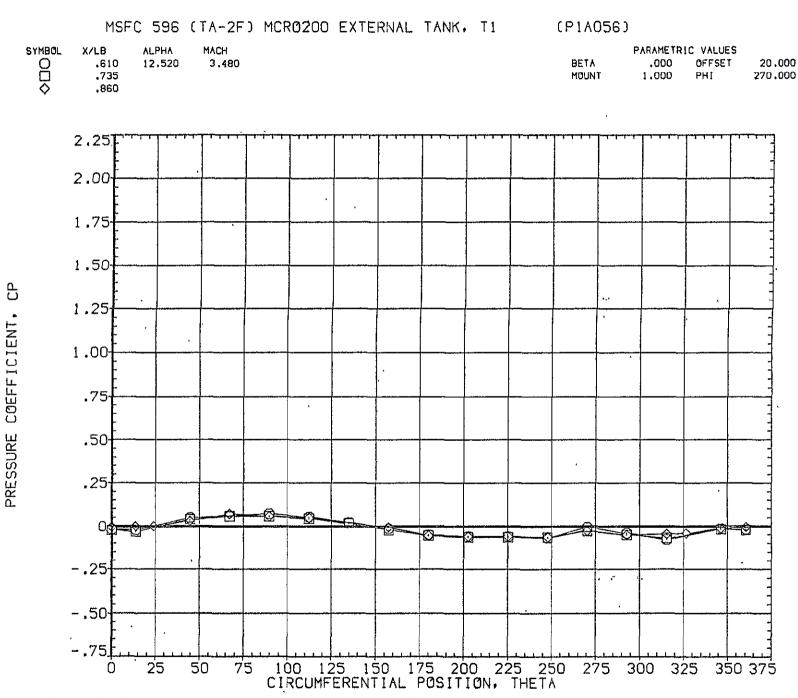


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1623

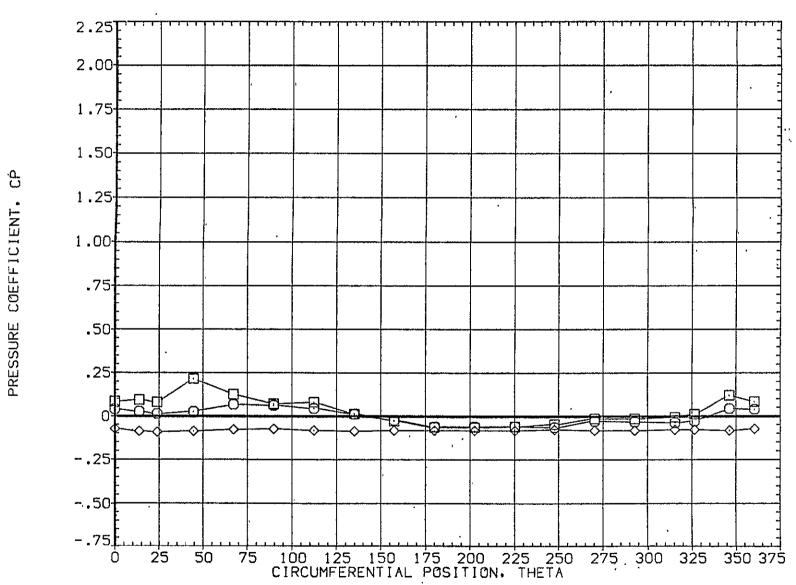


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1624

MCEC	500	(TA-2E)	MCBUSOO	EXTERNAL.	TANK.	T 1	(P1A057)
いろたし	フプロ	ししハースドラ	TICKUZUU	EVIEKINVE:	1 (1)(1)(1)	1.1	(LIVO2/)

SYMBOL	X/LB	ALPHA	MACH			PARAMETR	IC VALUES	
	.055	16.540	3.480	•	BETA	.000	OFFSET	20.000
ŏ	.108				MOUNT	1.000	PHI	270.000
\Diamond	.162							

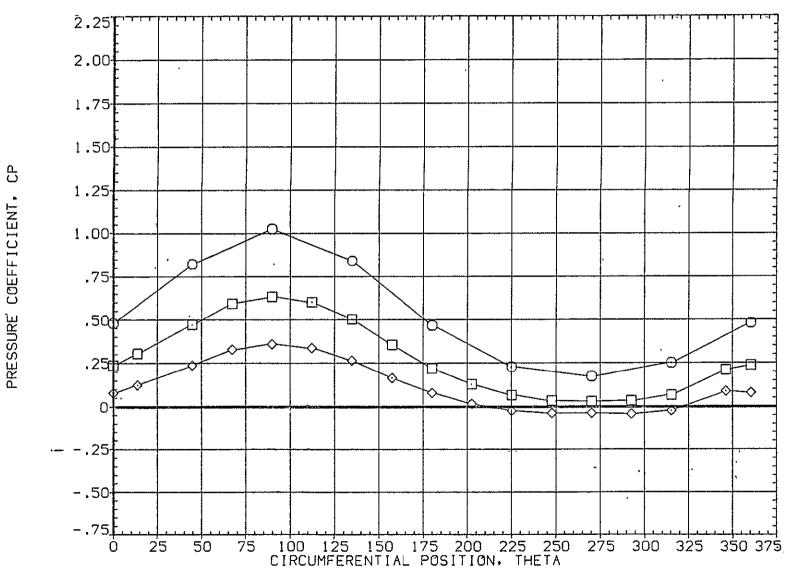
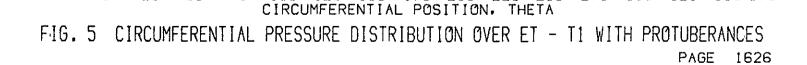


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1625



100 125 150 175 200 225 250 275 300 325 350 375

-.25

-.50-

-.75

MSEC	596	TTA-2F1	MCROZDO	FXTFRNAL	TANK.	TI

(P1A057)

SYMBOL O O O	X/L8 •610 •735 •860	ALPHA 16.540	MACH 3,480								BETA MOUN		ARAMETR .000 1.000	IC VALUES OFFSET PHI	20.009 270.009
	2.25	1111111		-1-1-1 -1	7177	 	 	 	 	7	,,,,,	, , , , ,		7 7 7 7	
	2.00														
	1.75											1			
	1.50														
j	1.25														
COEFFICIENT,	1.00			· · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·]				
	.75														
	.50														-
	.25								ļ						
	0			<u> </u>		-0-	O	Q	⊘	<u> </u>	1	·			
	25												-		
	50														
	75 0	25	50 75	<u> </u>	00 1	25 15	50 1	75 2t	00 3	25 25	50 2	75 2	00 3	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

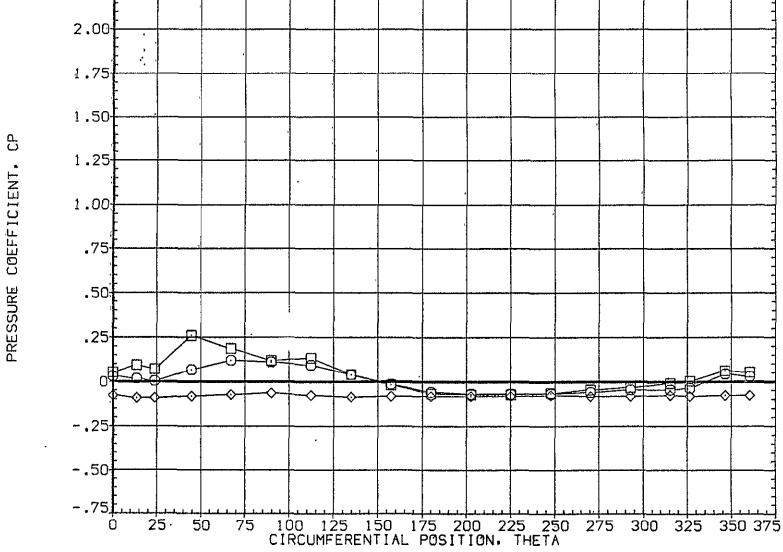


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1628

MBOL O	X/LB .055 .108	5 20 3	PHA .610	MACH 3.480								BETA MOUN		.000 1.000	IC VALUES OFFSET PHI	20.0 270.0
	2.25		 				, , , , ,	 	1	, , , , ,		 	, , , , , ,	 	TT	
	2.00	- - - -														
	1.75	-												,		
	1.50-	•														
	1.25	· · ·			<u> </u>	<u> </u>								<u> </u>		
	1.00	· ·	~				\cdot	:								
	.75				-0 -							<u> </u>				
	.50			0	_		E .		0					,		
	.25		· · · · · ·		 		A	8		\)———	_		-0		
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	25			5			 .									
	~.50				·											
	75 0	2		0 7	-1-1 -1-1	00 12	- 	50 1	75 20			50 27	75 3(00 32		375

'FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1629

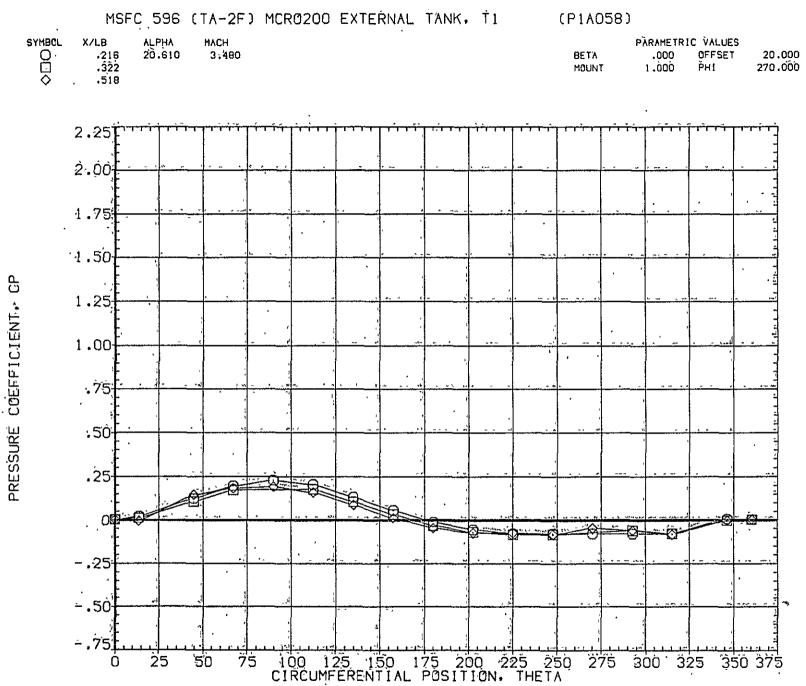


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

5

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A058)

SYMBOL	X/LB	ALPHA	MACH	· PARAMETRIC VALUES	}
0	.610	20.610	3,480	BETA .000 OFFSET	20.000
	.735			1.000 RH1	270.000
\diamond	.860				

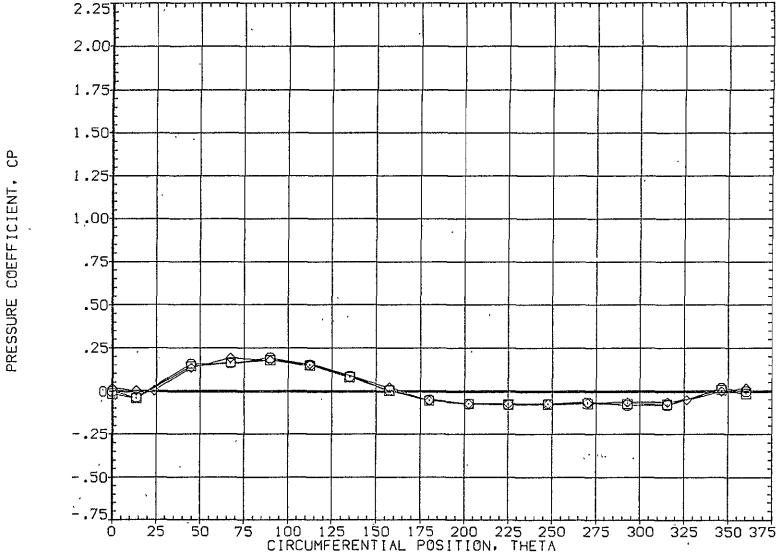


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1631

SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUES

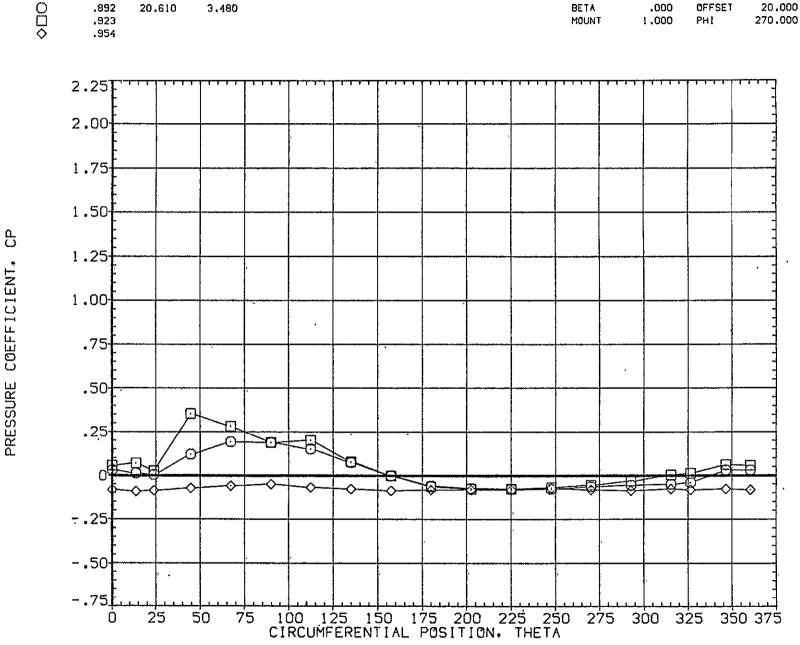


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1632

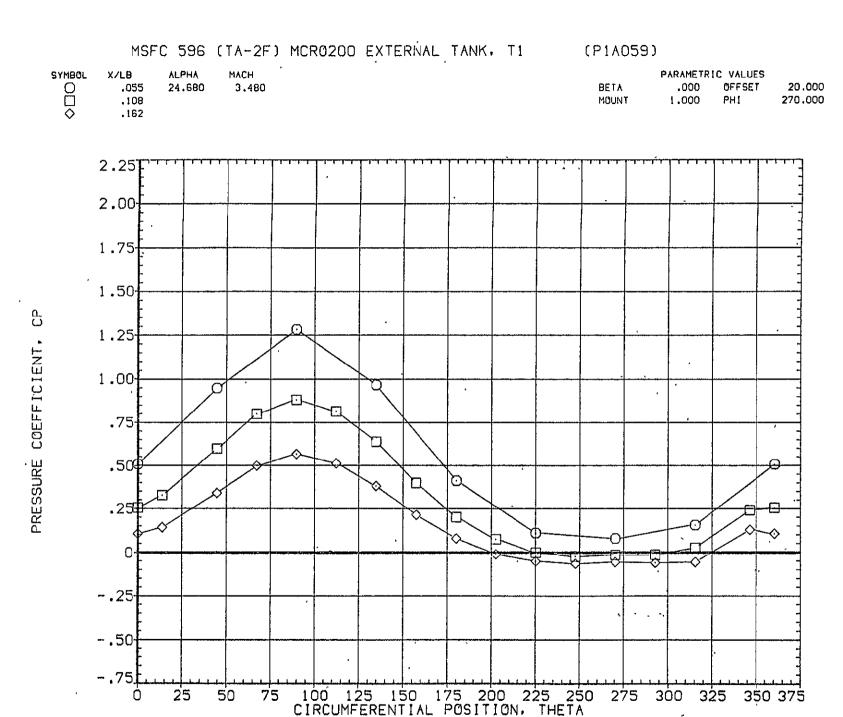


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1633

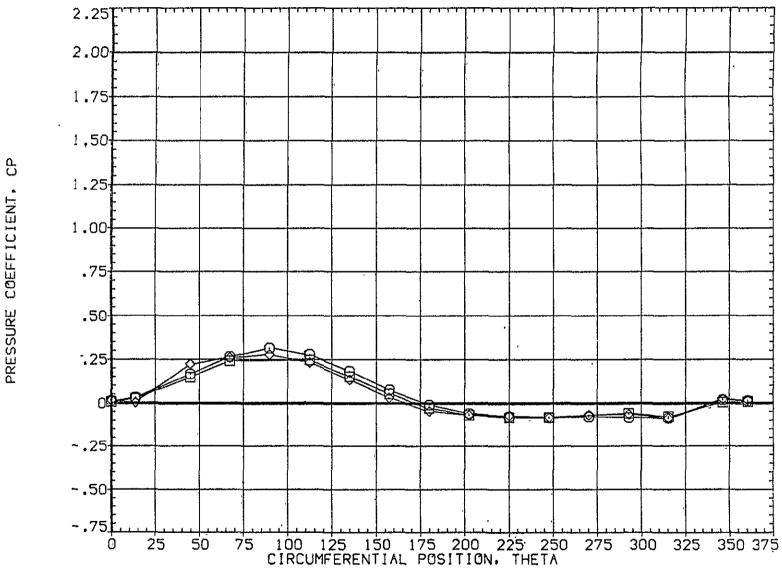


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1634

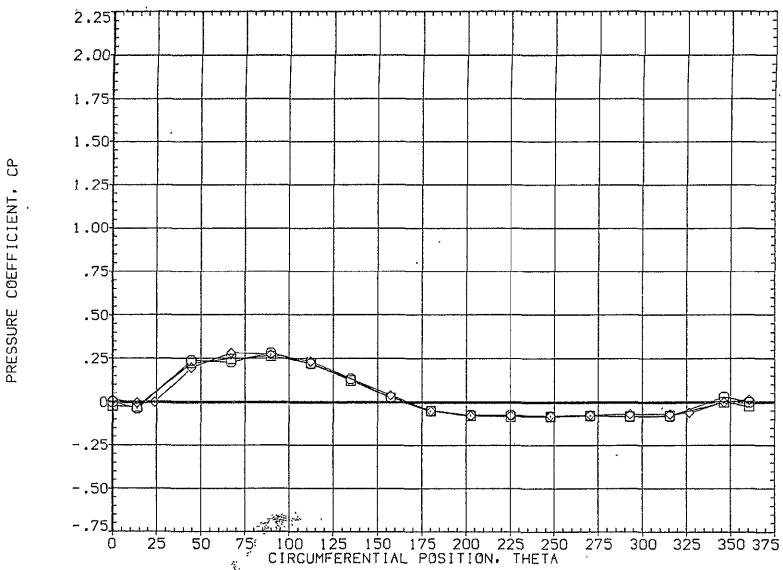


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE: 1635

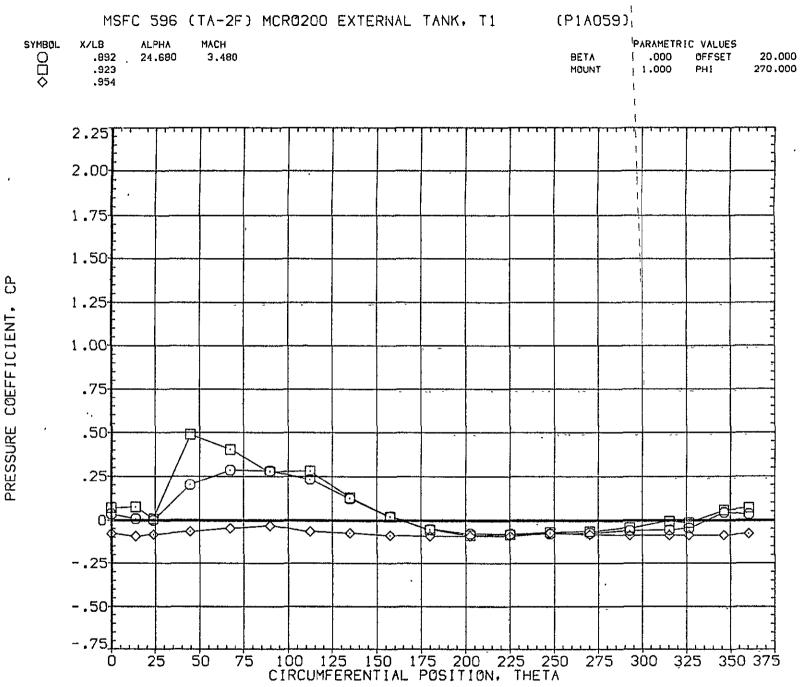


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1636

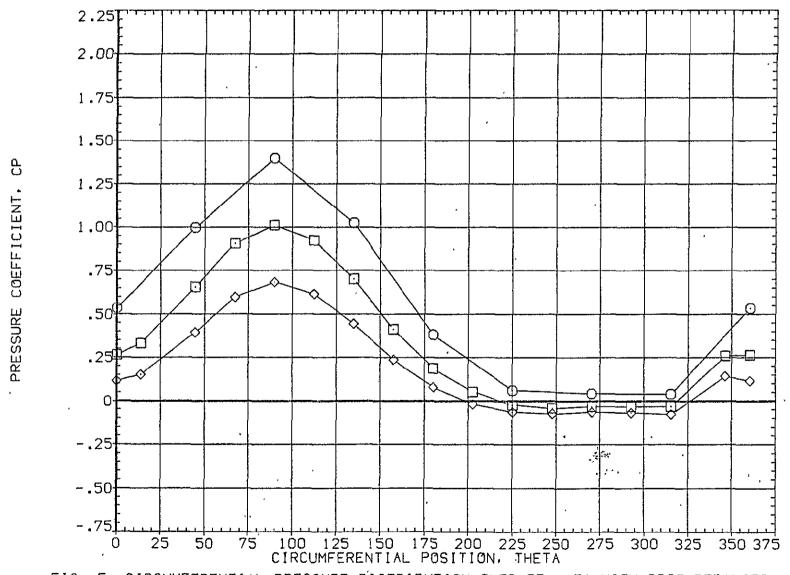


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1637

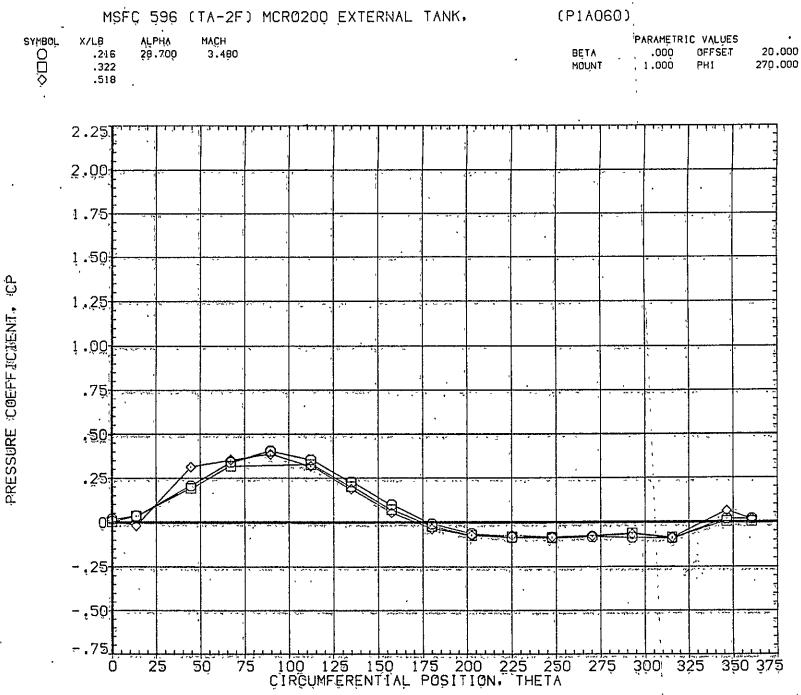


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1638



(P1A060)

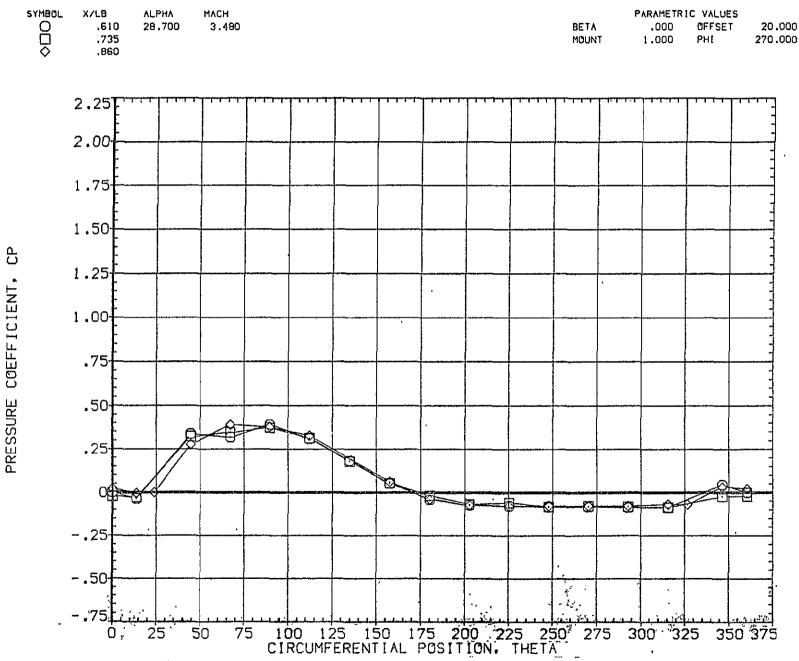


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - 11 WITH PROTUBERANCES
PAGE 1639

SYMBOL	X/LB	ALPHA	MACH	PARAME	RIC VALUES	
Q	.692	28.700	3.480	BETA .000	OFFSET	20.000
닞	.923			MOUNT 1.000	PHI	270.000
♦	.954				,	

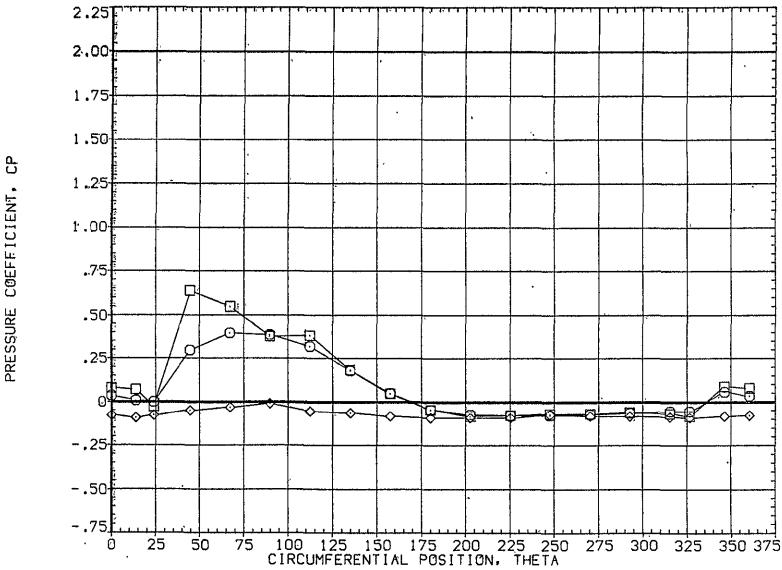
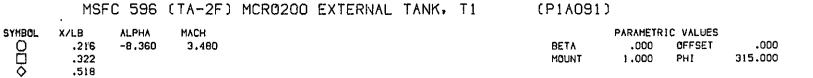


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1640

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1641



.518

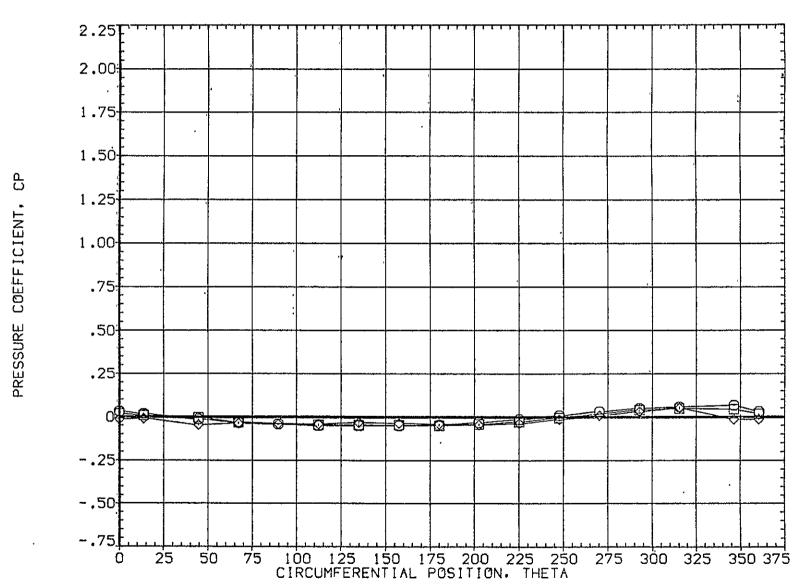


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1642

SYM8OL X/LB **ALPHA** PARAMETRIC VALUES MACH 000 -8.360 3.480 BETA .000 OFFSET .000 .610 .735 MOUNT 1.000 PHI 315,000 .860

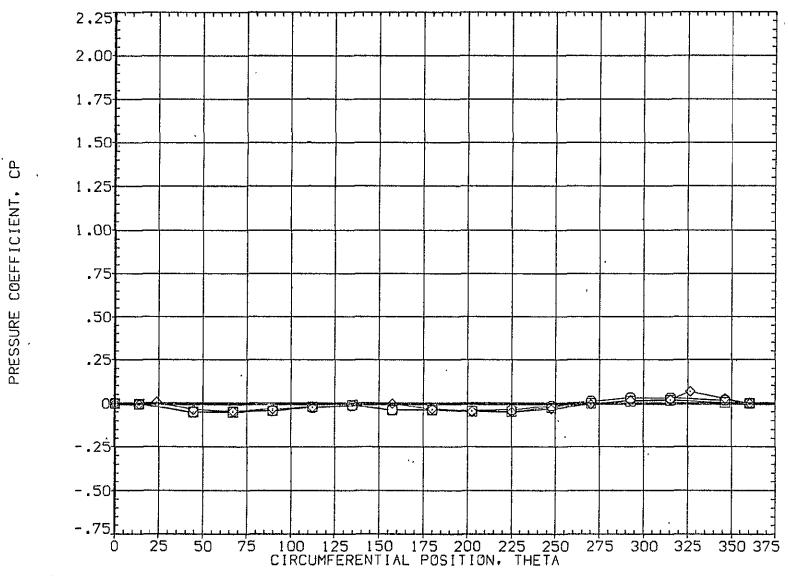


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1643

SYMBOL.

X/LB

ALPHA

MACH

PARÁMETRIC VALUES

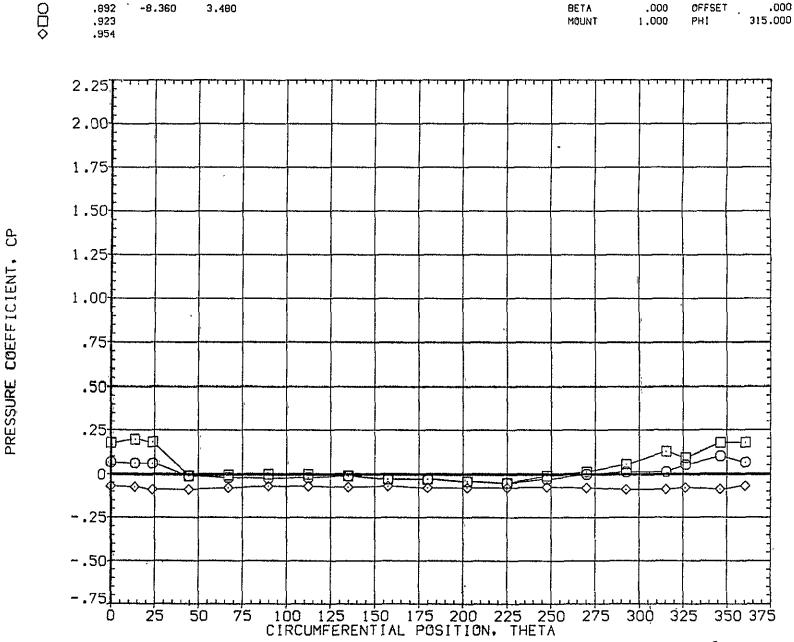


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1644

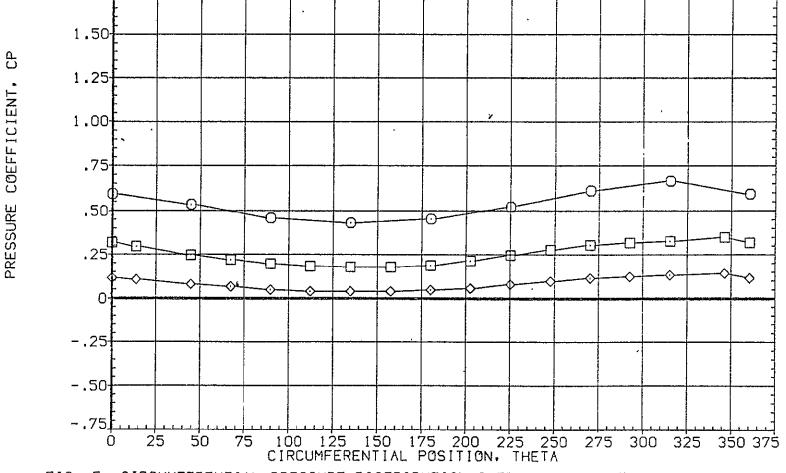


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1645

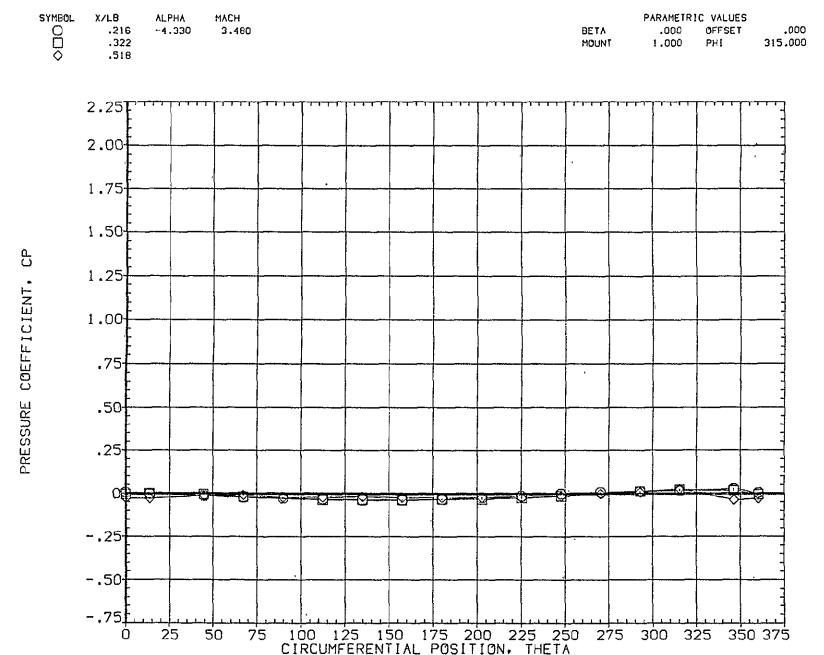


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1646

SYMBOL

X/LB

-.75

ALPHA

MACH

(P1A092)

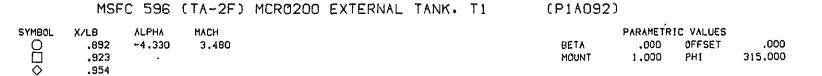
PARAMETRIC VALUES

0□◊ .610 -4.330 3.490 BETA .000 OFFSET .000 .735 MOUNT 1.000 PH! 315,000 .860 2.25 2.00 1.75 1.50 Ω 1.25 CÖEFFICIENT, 1.00-.75 PRESSURE .50 .25 **=**� -.25 -.50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375



.954

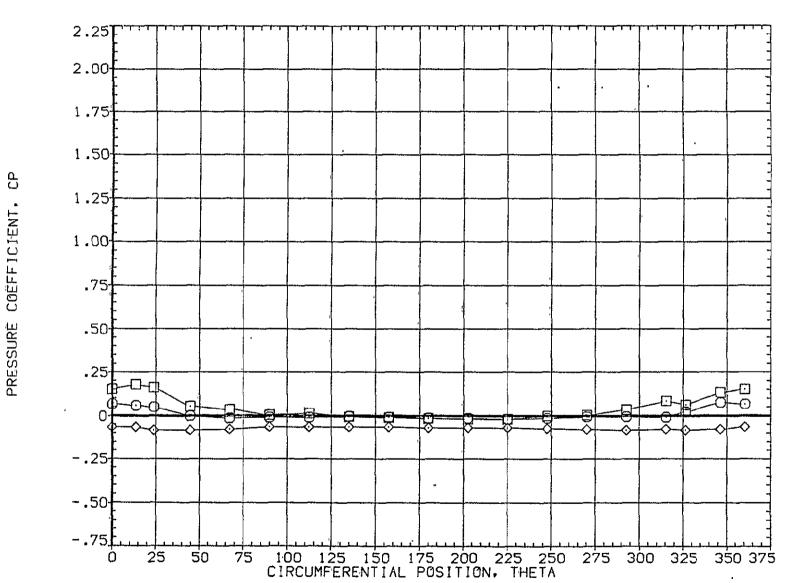


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1648

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A093) SYMBOL X/LB ALPHA MACH PARAMETRIC VALUES **○**□**◇** .000 -.280 3,480 BETA .000 OFFSET .055 1H9 315.000 MOUNT 1.000 .108 .162 2.25] 2,00 1,75 1.50 ප 1.25 COEFFICIENT, :1.00 .: .75 PRESSURE .50

.100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1649

- .25⁻

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- .75

25

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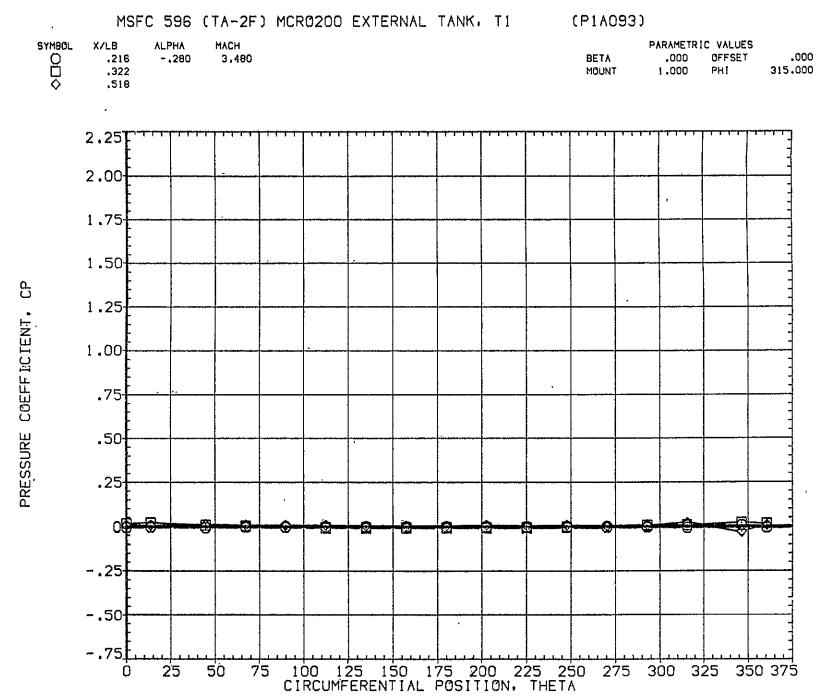


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1650

MOCO	EOO	CT4 003	MCDROOD	CVTCOLL	アメトル	T 1
1412 L	DMD.	ししハーノトリ	MURUZUU	EXTERNAL	I MININ .	1 1

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SYMBOL	X/LB	ALPHA	MACH		P	ARAMETR	IC VALUES	
g	.610	280	3,480	BETA		.000	OFFSET	.000
	.735			MOUNT		1.000	PH!	315.000
_	200							

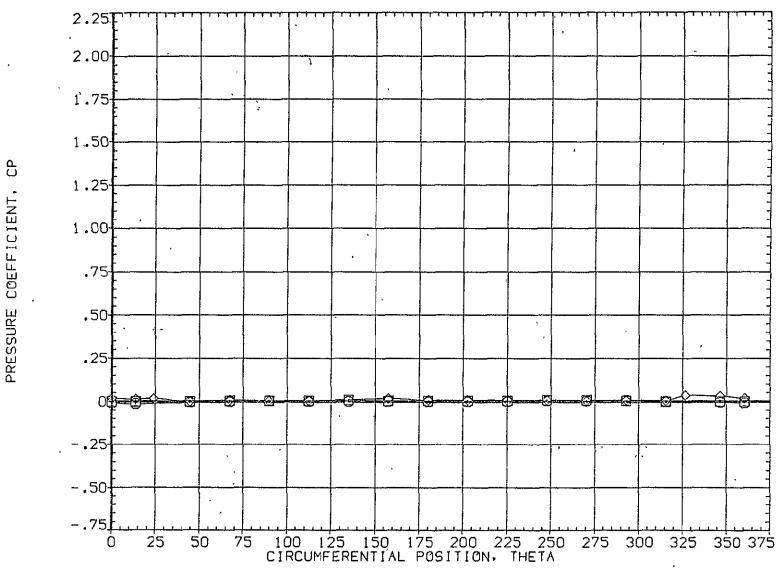


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1651

SYMBOL X/LB

-.50

50

ALPHA

MACH

PARAMETRIC VALUES

000 .892 -.280 3.480 BETA .000 OFFSET .000 1.000 PHI 315.000 .923 MOUNT .954 2.25 2.00 1.75 1.50 ďЭ 1.25 PRESSURE COEFFICIENT. 1.00 .75 .50 -.25

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

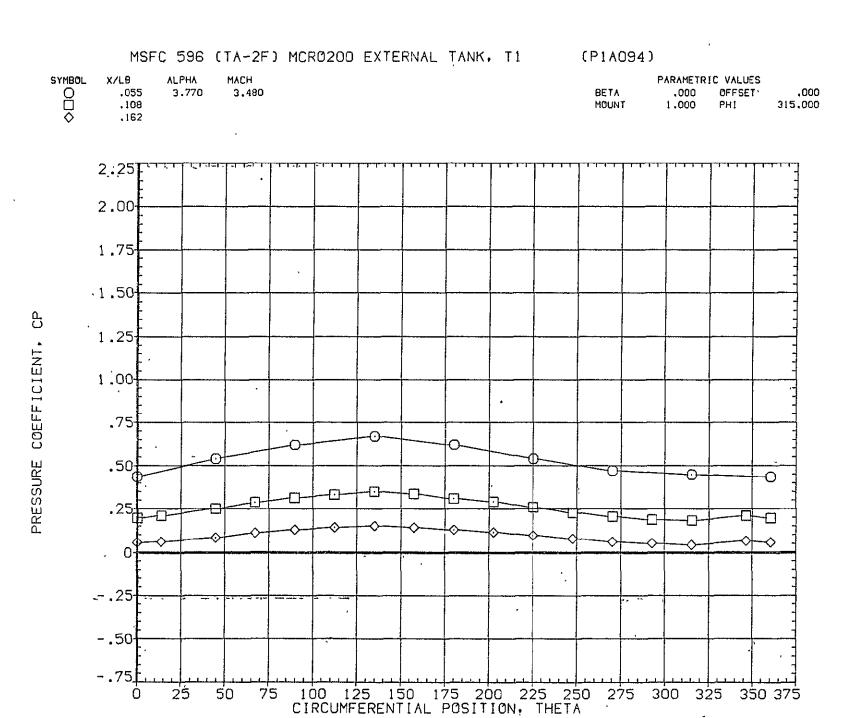


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1653

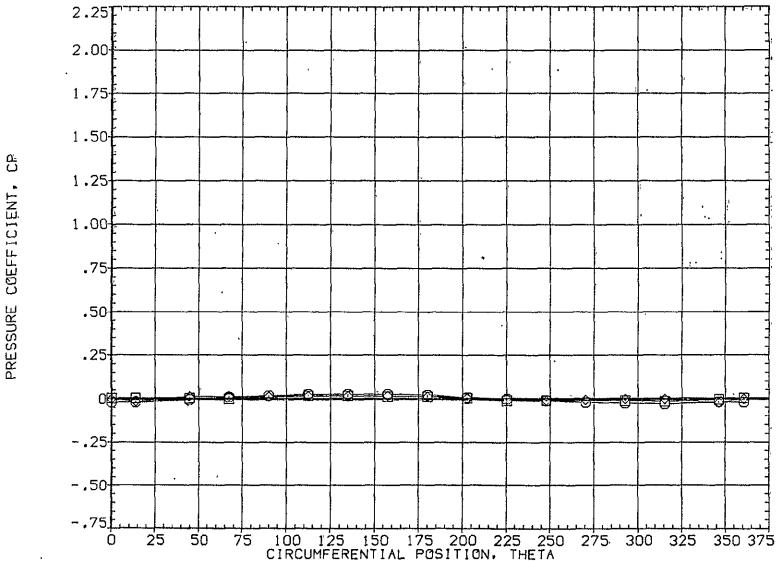


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1654

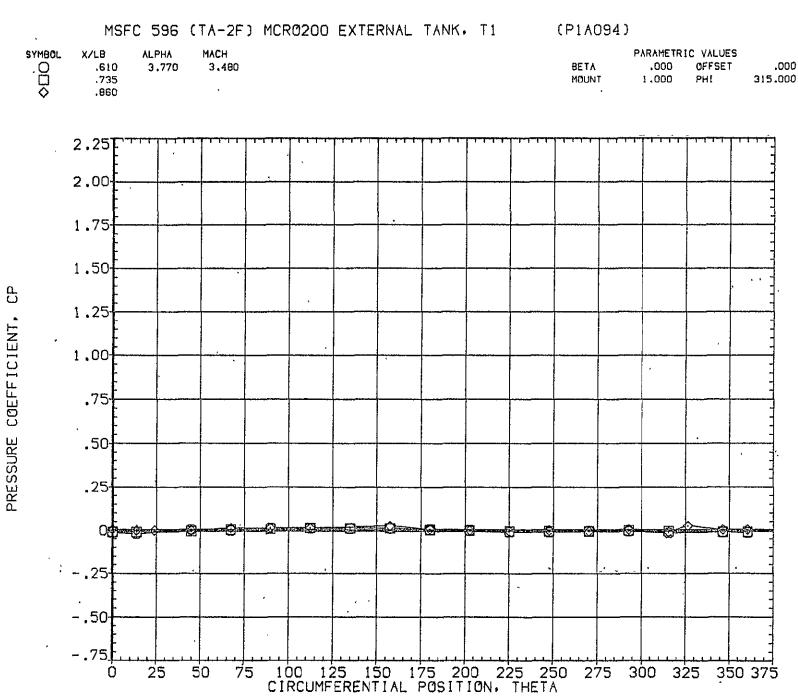


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1655





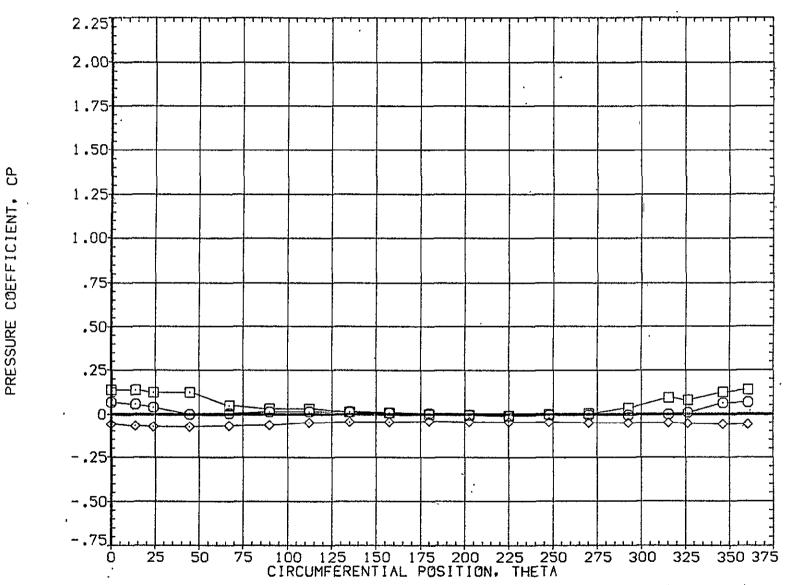


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1656

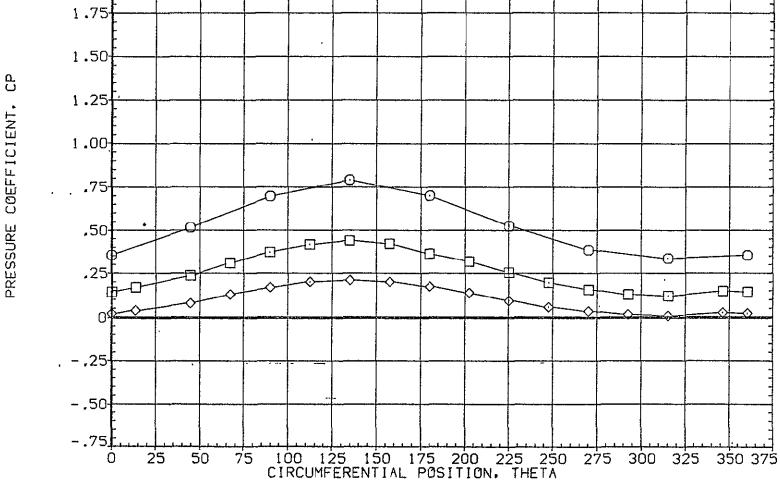


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





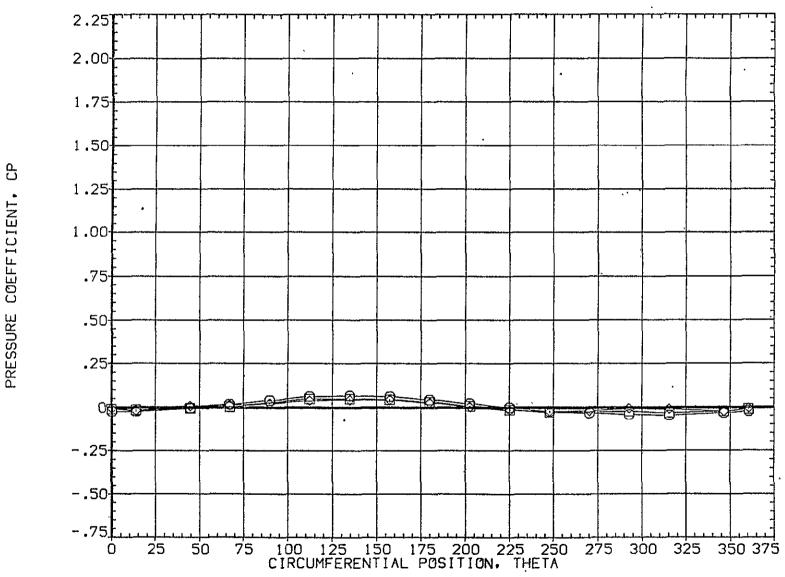


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1658

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUE	S
9	.610	7.800	3.480	BETA .000 OFFSE	.000
Ď	.735			MOUNT 1.000 PHI	315.000
\Diamond	.860				

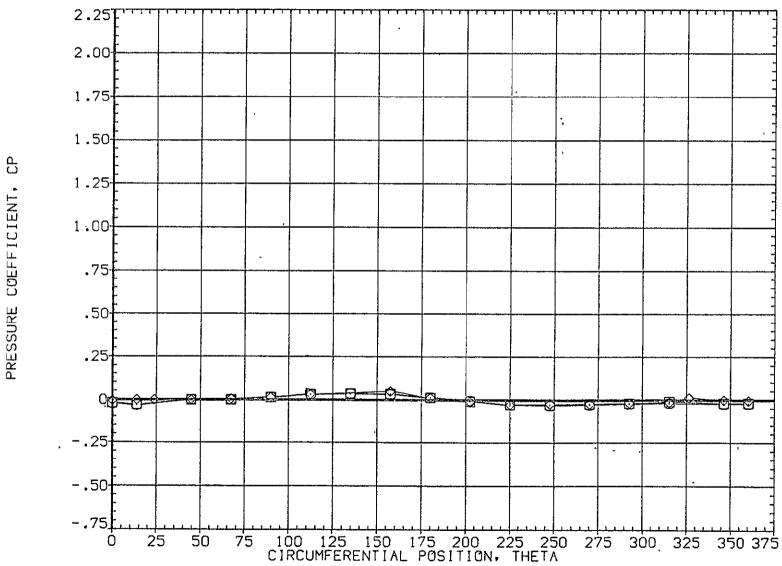
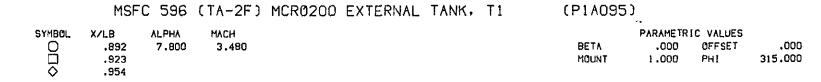


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



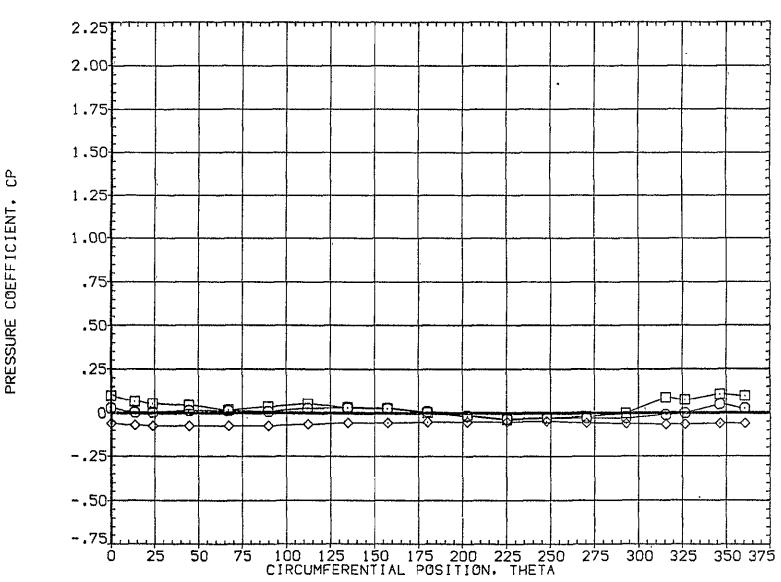


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1660

MSEC	596	(TA-2F)	MCRROON	EXTERNAL	TANK.	Ti
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SYMBOL	X/LB	ALPHA	MACH	PARAM	ETRI	C VALUES	
Q	.055	12.500	3.480	BETA .O	00	OFFSET	20.000
	.108			MOUNT 1.00	30	PHI	315.000
\wedge	100						

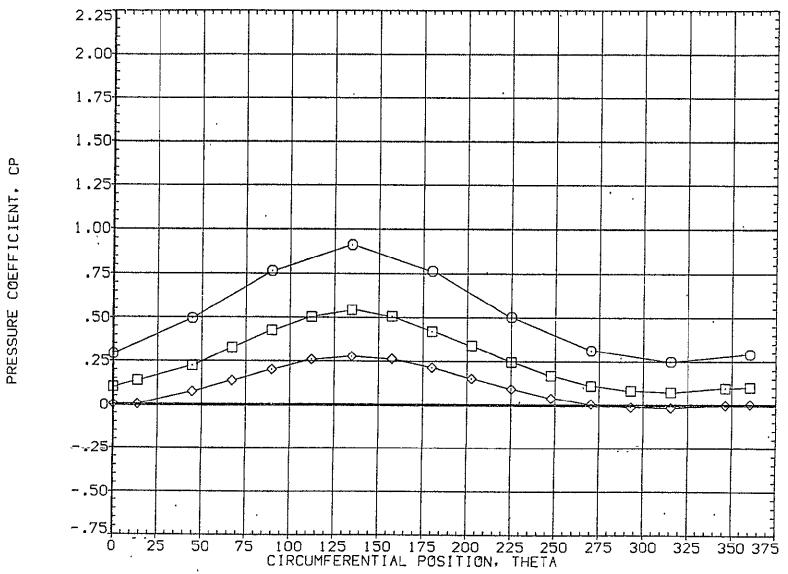


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1661

SYMBOL X/LB

ALPHA

MACH

PARAMETRIC VALUES

.518											BETA MOUN	١T	.000 1.000	OFFSET PHI	
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75 <u>F</u>			<u> </u>	<u>, , , , , , , , , , , , , , , , , , </u>		1,,,,									
	75 50 25 00 25 25 50	75 50 75 50 75 25	75 50 25 50 25 25 50 25	75 50 25 00 75 50 25 0	00	00	00	00	00	00	00	00	00	00	00

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1662





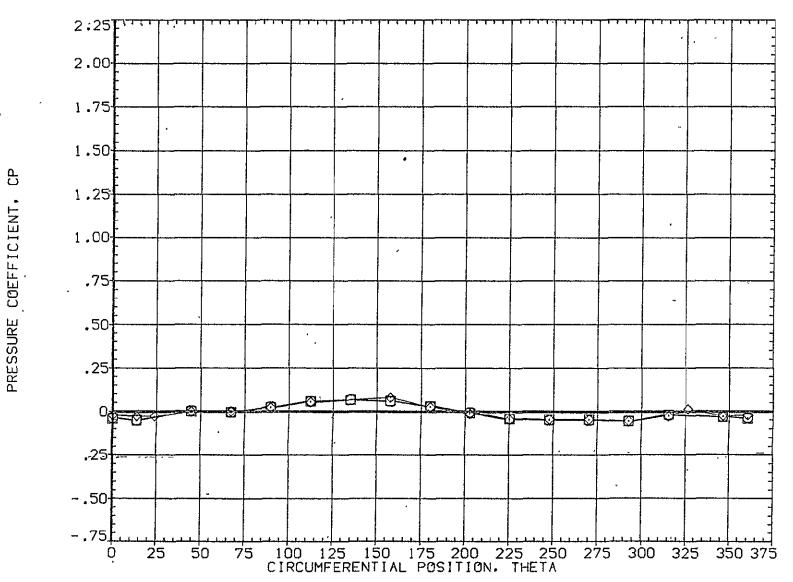


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES



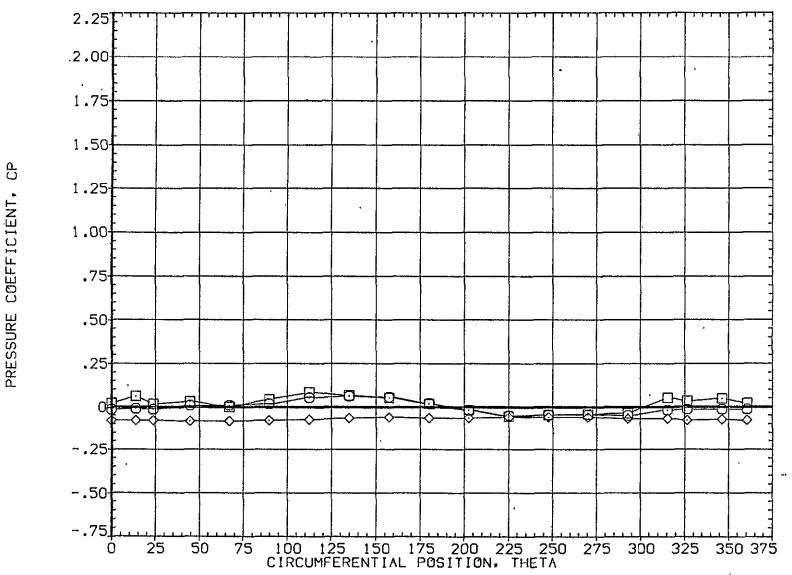


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1664

	MSF	C 596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T 1	(P1A097)		
SYMBOL	X/LB .055 .108 .162	ALPHA 16.560	MACH 3.480					BETA MOUNT	PARAMETR .000 1.000	IC VALUES OFFSET PHI	20.000 315.000
			,								

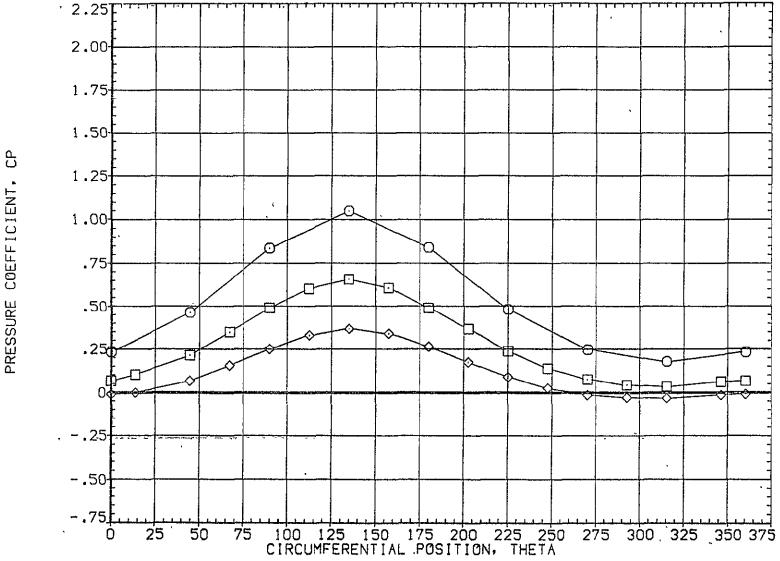


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1665





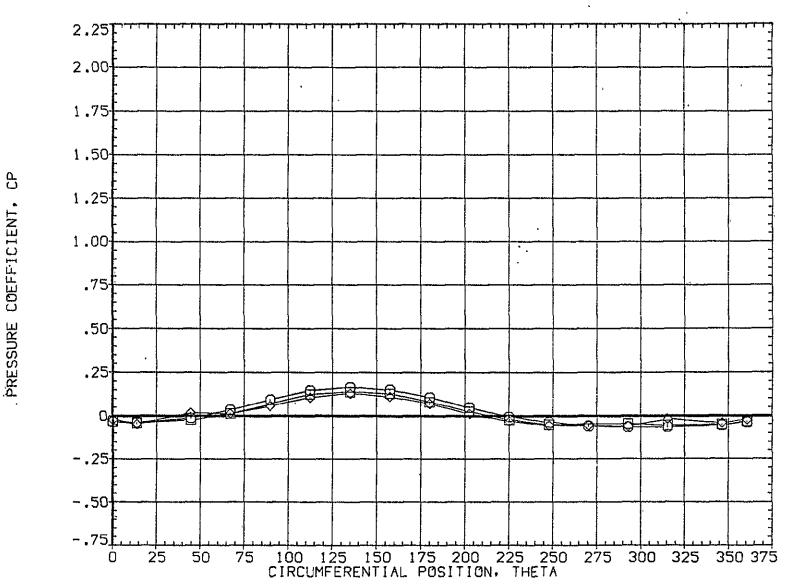


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1666



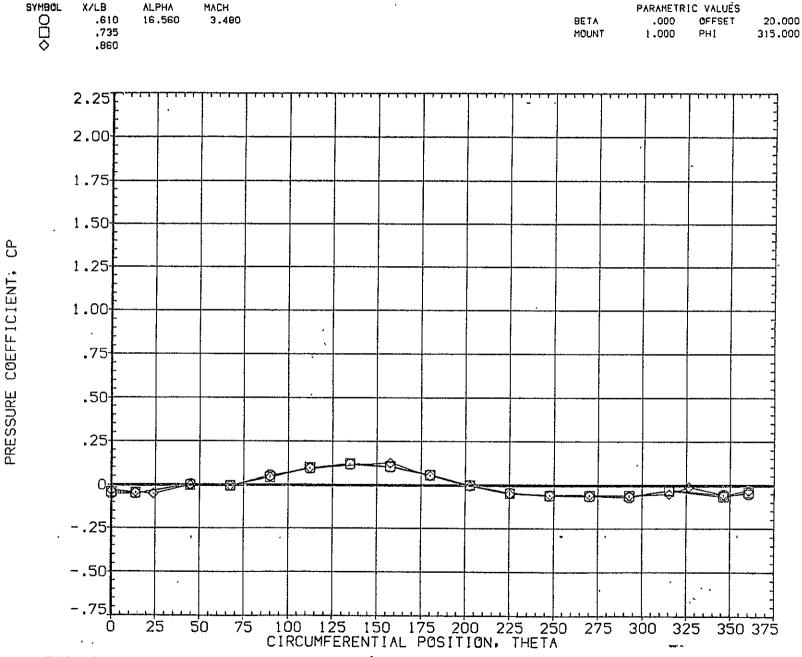


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

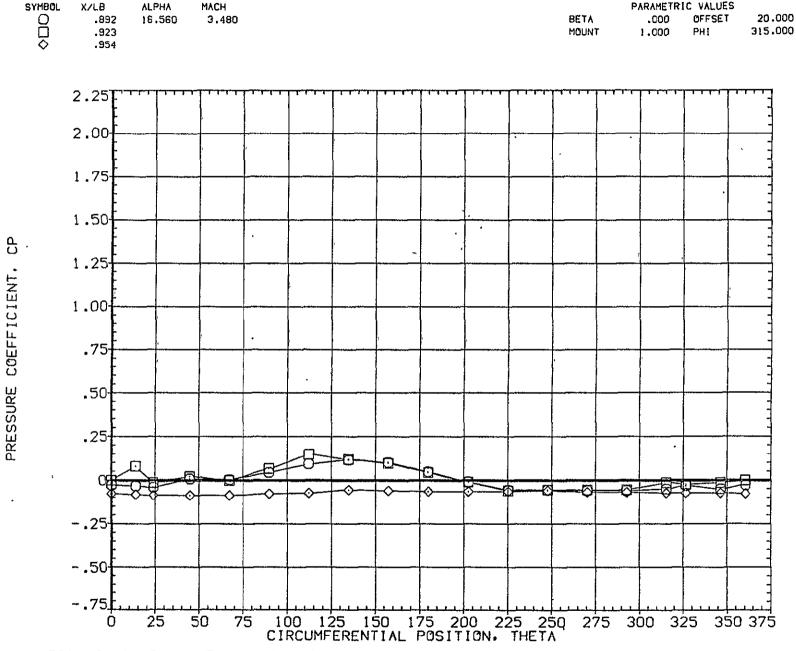


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1668

MSEC 59	16 [[A-2F]) MCR0200	FXTFRNAL	TANK.	T 1

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SYMBOL	X/LB	ALPHA	MACH	PARAMETR I	C VALUES	
0	.055	20.610	3.480	BETA .000	OFFSET	20.000
ă	.108			MOUNT 1.000	PHI	315.000
\Diamond	.162					

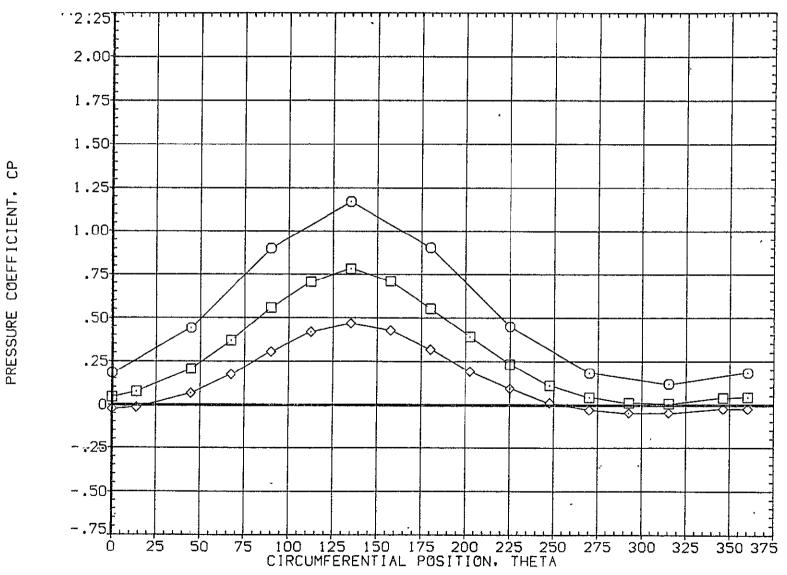
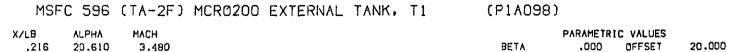


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1669



1.000 PHI

315.000

MOUNT

SYMBOL

000

.322

.518

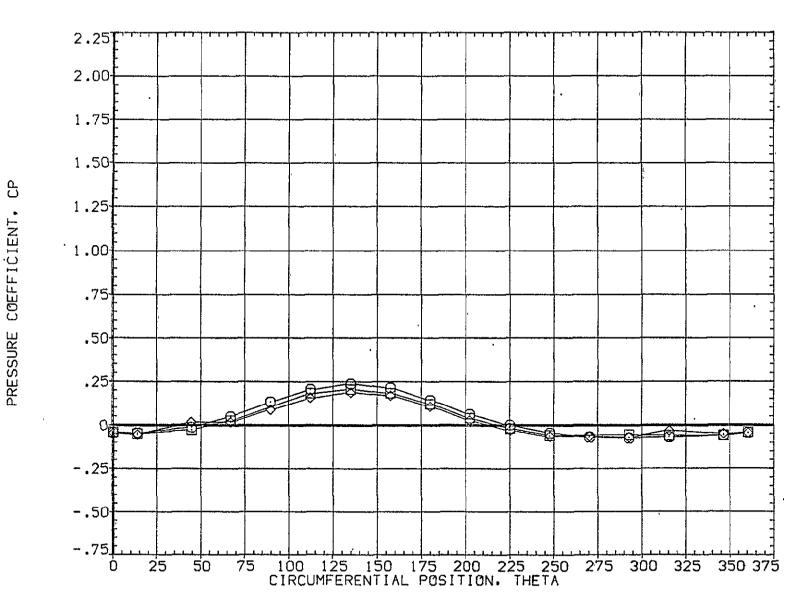


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE: 1670

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1671

-.50-

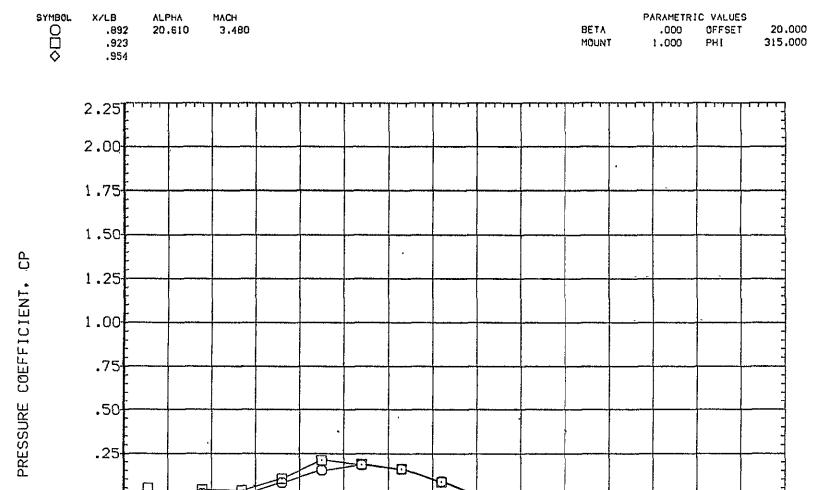
-.75

25

50

75





FÍG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1672

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.25

-.50

MSEC	596	(TA-2F)	MCBUSOU	EXTERNAL	TANK. T	1
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(P1A099)

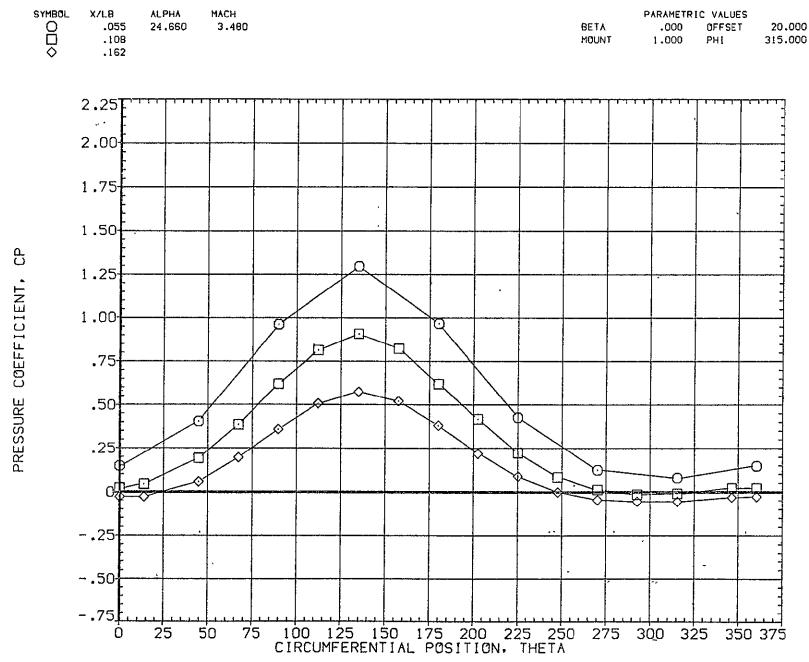
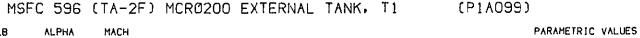


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1673





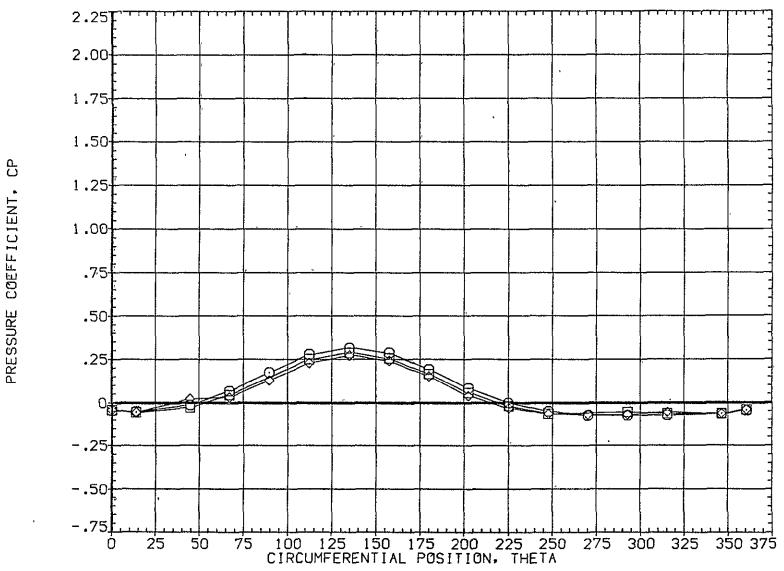


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1674

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 0□◊ .610 24.660 3.480 BETA .000 OFFSET 20.000 ,735 TAUOM 1.000 PHI 315.000 .860

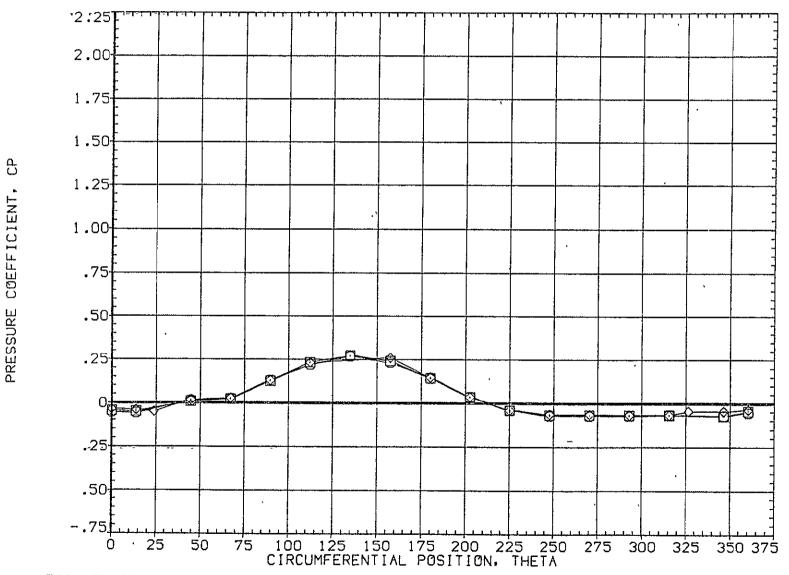


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1675

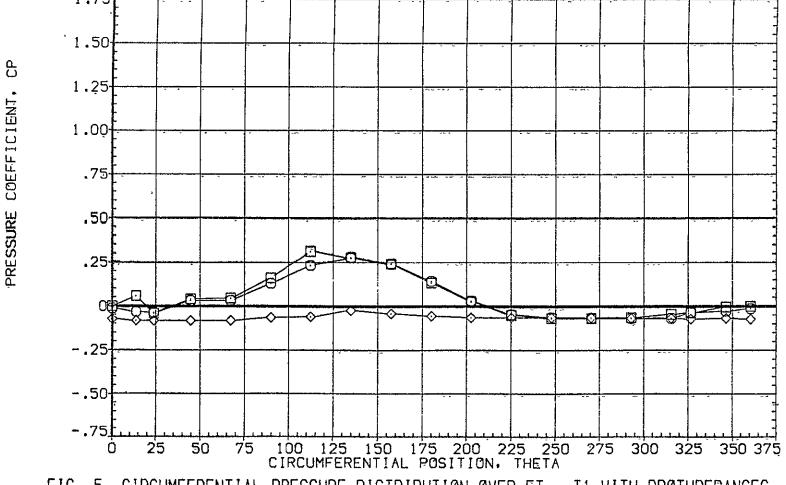


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1676

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTÚBERANCES

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

- .75L

50





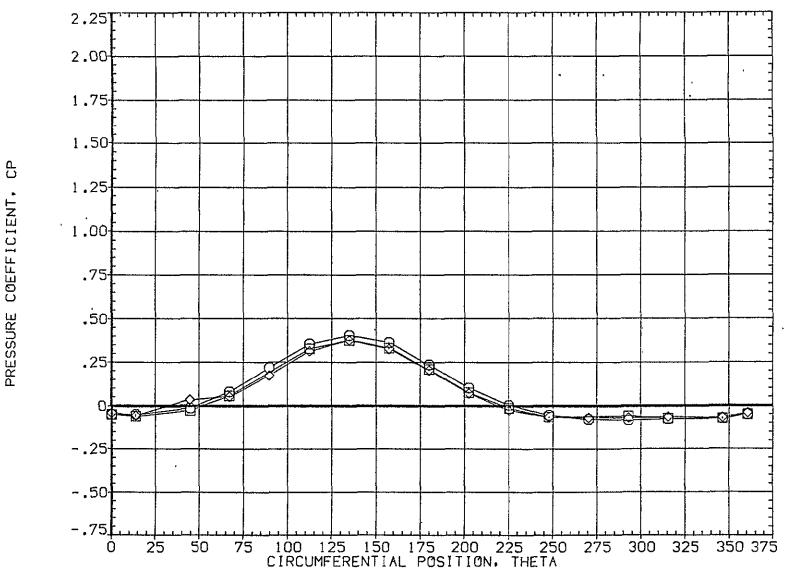


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1678

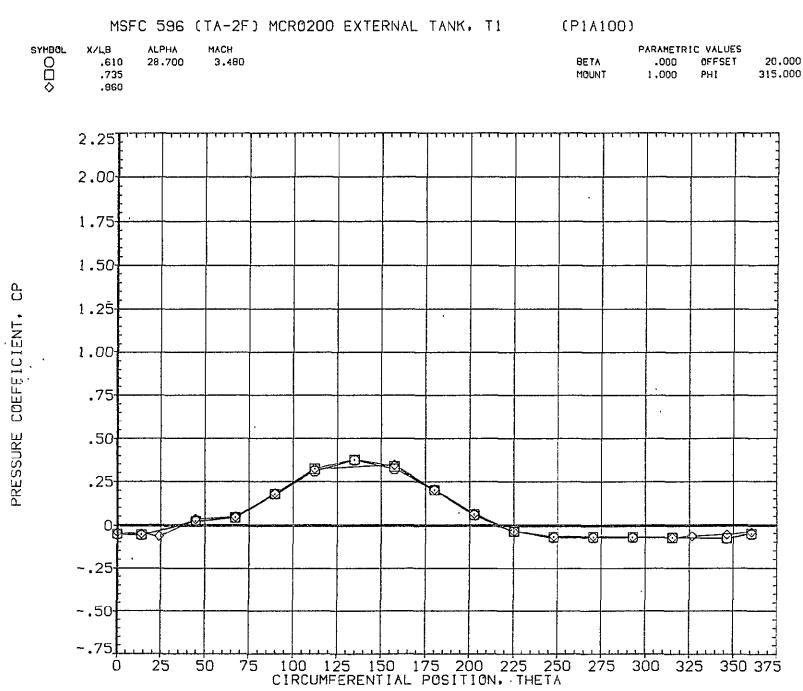


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1679

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SYMBOL	X/LB	ALPHA	MACH	PARAMETR	PARAMETRIC VALUES	
Q	.892	28.700	3.480	BETA .000	OFFSET	20.000
	.923			MOUNT 1.000	IH9	315.000
\Diamond	.954					

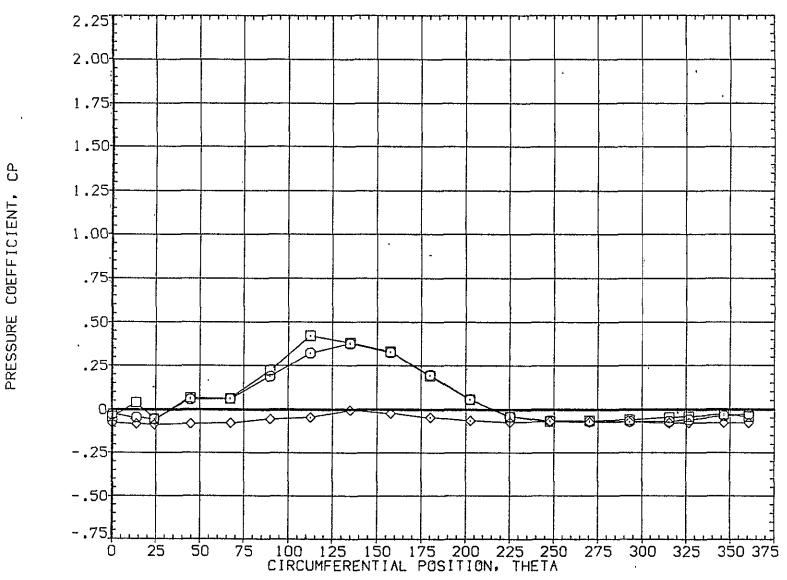


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1680

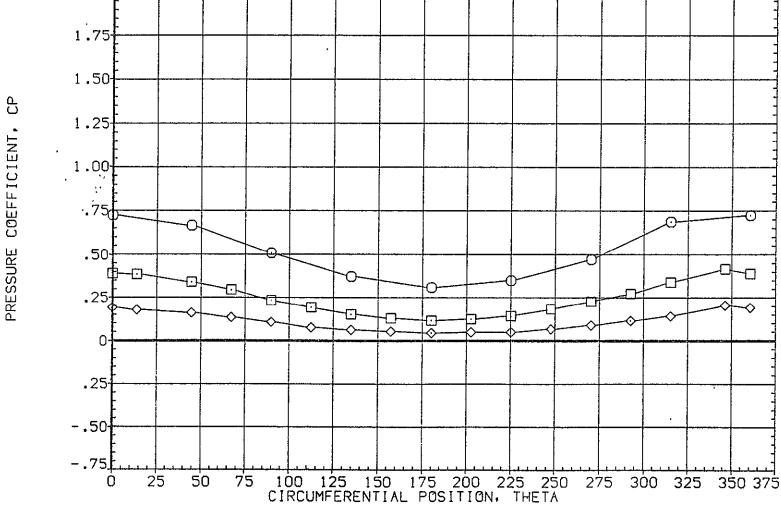
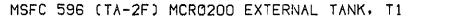


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1681



SYMBOL

X/LB

.216

ALPHA

-8.310

MACH

4.960

(P1A001)

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

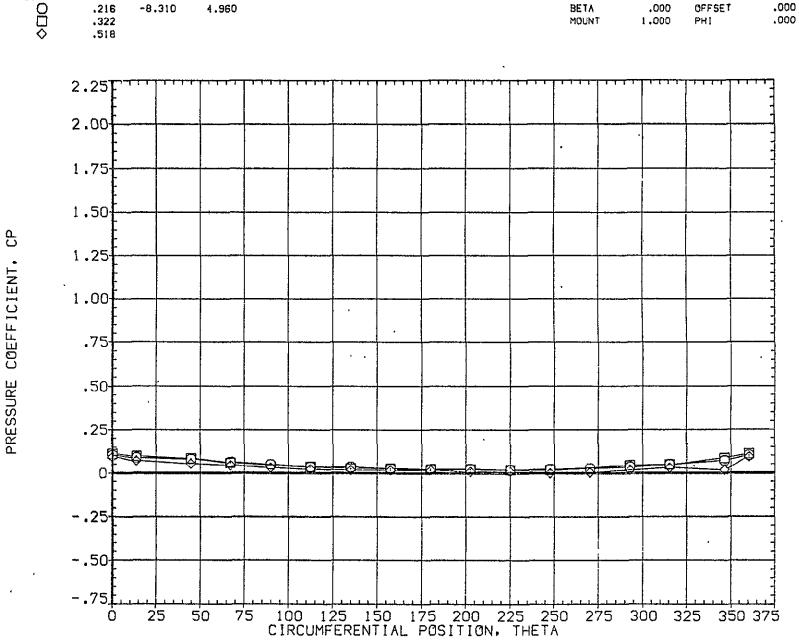


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1682



SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUES

000 .610 -8.310 4.960 BETA OFFSET .000 .000 .735 MOUNT 1.000 PHI .000 .860 2.25 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 · .25-

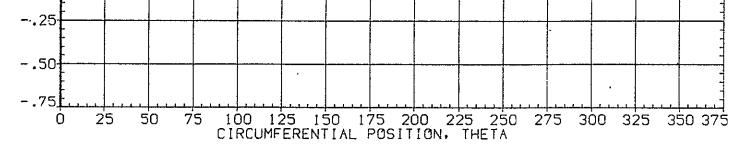
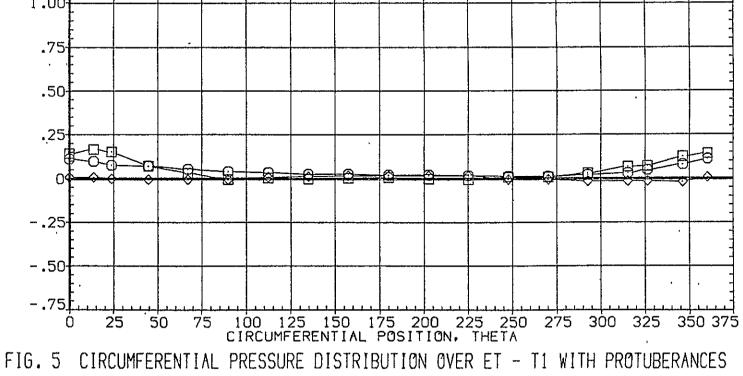


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1683



PAGE 1684



SYMBOL.	X/LB	ALPHA	MACH	PARAMETRIC VAI	LUES
0	.055	-4.290	4.960	BETA .000 OFF	SET .000
	1.108			MOUNT 1.000 PHI	.000
\Diamond	.162				

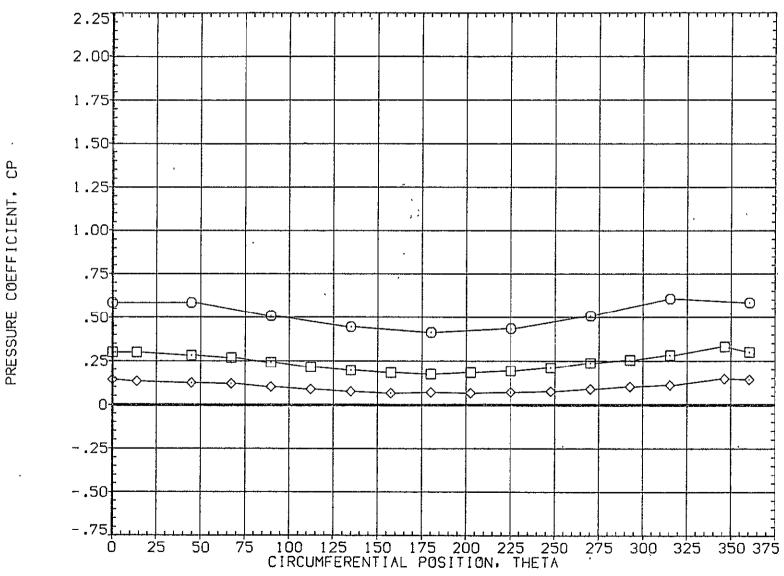


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1685

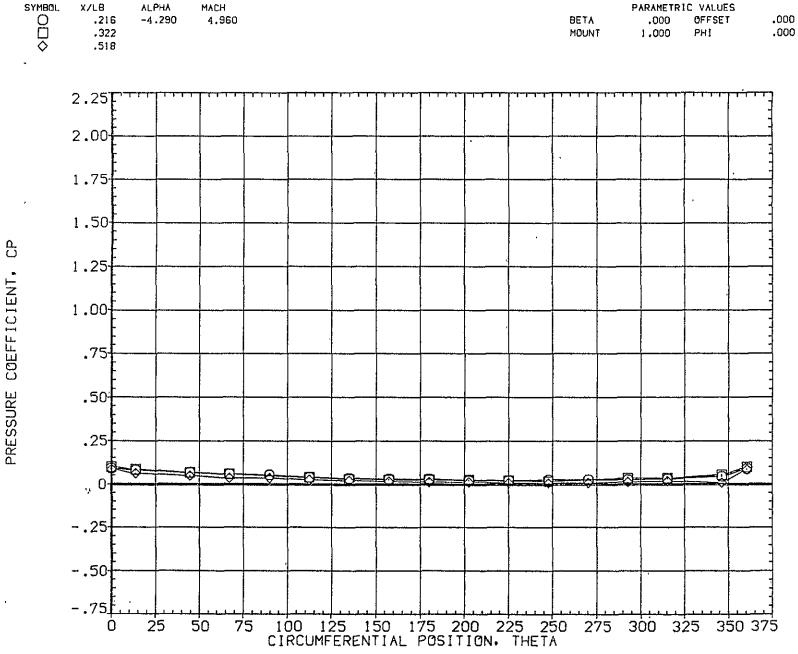


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1686

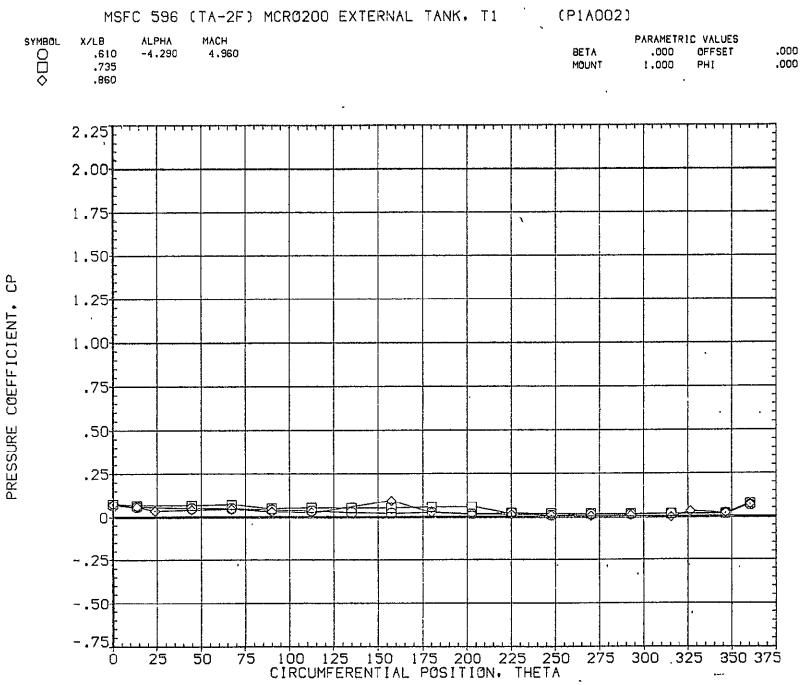
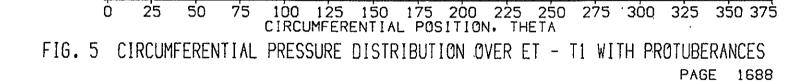


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1687



-.25

-.50

-.75L

25

50

75

SYMBOL O O	X/LB .055	l	РНА 280	MACH 4.960								BETA MOUNT		ARAMETR! .000 1.000	C VALUE OFFSET PHI	s
V	.162 2.25						1. 1. 1 - 1	 • • • •	, , , , , , , , , , , , , , , , , , , 		, 1 		- 1 - 1 - 1	 		لسنا
	2.00															
	1.75											•	· . ·			
	1.50															1
	1.25	-								₹ 0		, , , ,, =				
	1.00	-				, 			:				.,, <u>.</u> , ,,,			-
	. 75-	- -		· · · · · · · · · · · · · · · · · · ·		_								•		
	.50 _c	· -	0		 O		- 0		0	()	0	·	0-		-0 :
	.25		<u>_</u>				-0		<u> </u>] - [-		 0	
	0-	- <u>`</u>	~		<u> </u>	<u> </u>			<u> </u>	ľ Ì	Ž				, v	-
	25	-	,									-	······································			<u>, , </u>
	50											4			,	

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1689

50

75

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

X/LB

.216

ALPHA

-.280

MACH

4.960

BETA

PARAMETRIC VALUES

.000

OFFSET

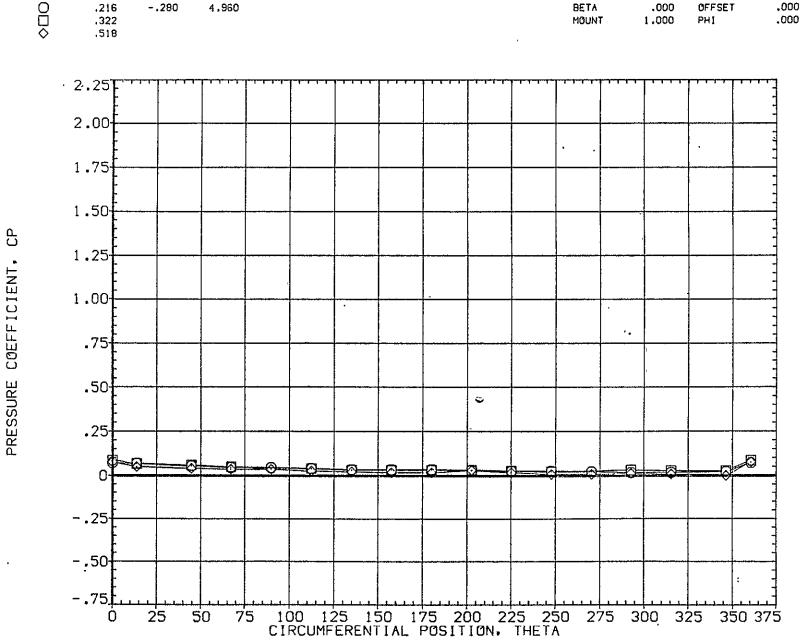


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1690

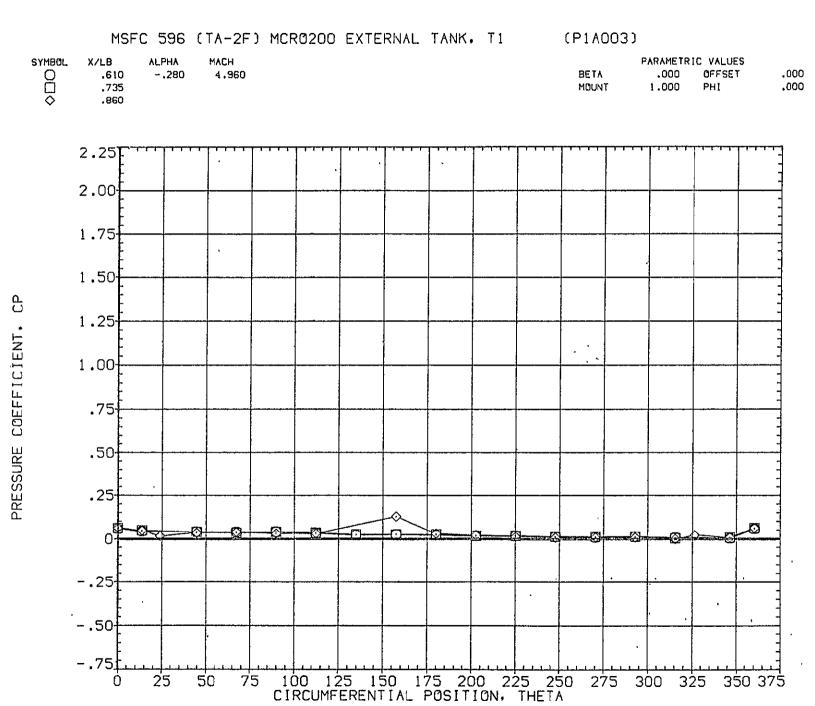


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1691

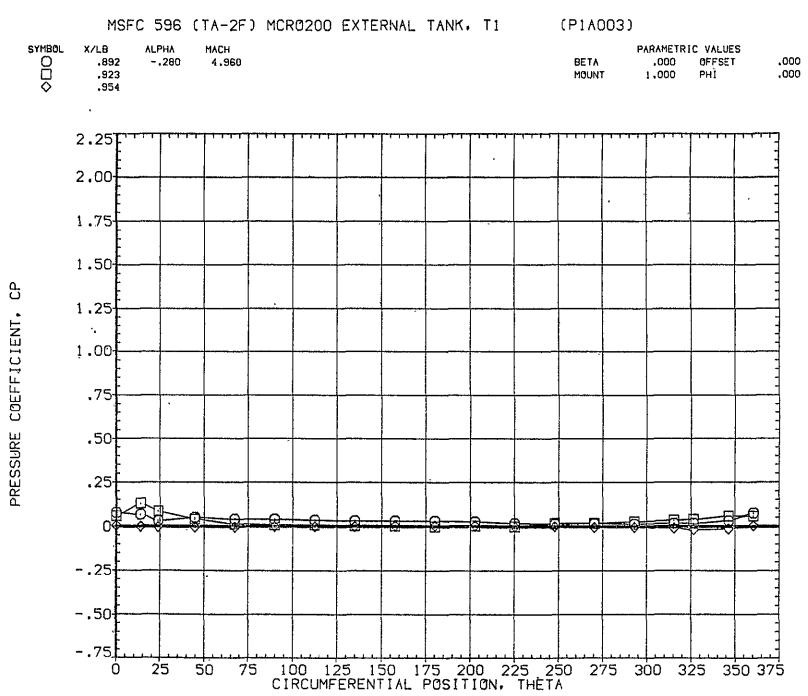


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1692

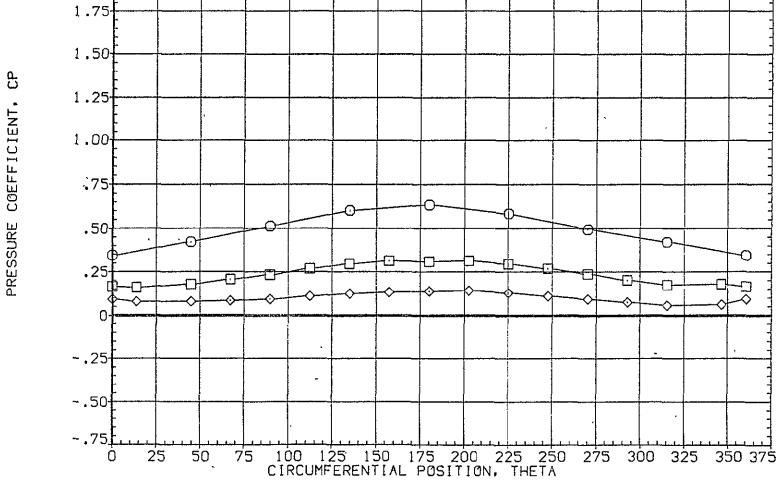


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1693





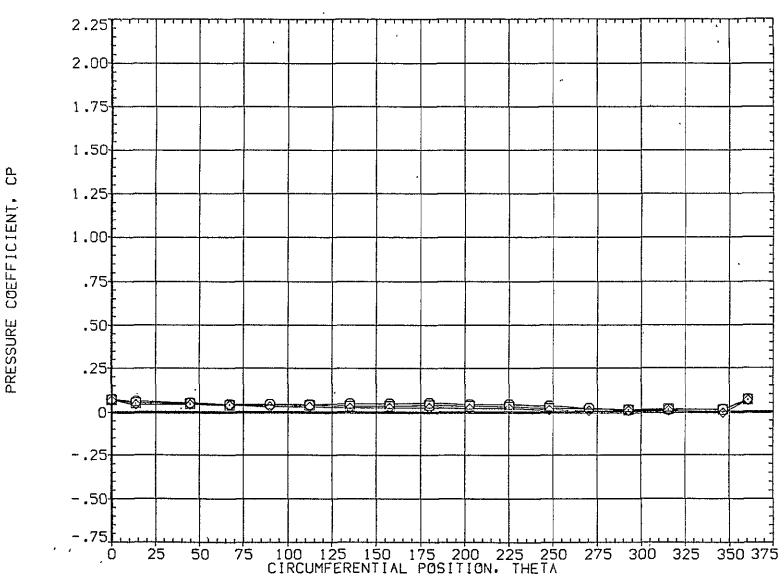
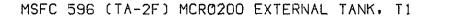


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1694



(P1A004)

	SYMBOL O O O	X/LB .61 .73 .86	0 3 5	.PHA 3.730	MACH 4.960								BETA MOUN		ARAMETR .000 1.000	IC VALUE OFFSE PHI	es T .000 .000
		2.25	F			1111		7777	 -	, , , , , , , , , , , , , , , , , , , 		, , , , , , , , , , , , , , , , , , , 	, 12, 1	13.17	7177	7,,,,	1
COEFFICIENT, CP		2.00	-														
		1.75	<u>-</u>	1					<u> </u>					<u> </u>			-
		1.50-	- -											<u> </u>			
		, 1 . 25-	-														
		1.00-	-					<u> </u>		 							
EFF II		.75-					-									1	
		.50-	- -												-		
PRESSURE		.25								-							-
ď		O-	}- 0-	<u> </u>	0		7	0-	Ô	a	3 -(- C			6
		25	-											,			,
		50-	•														
		75		<u> </u>	<u> </u>			-1, 1, 1, 1, 1		<u> </u>			, 	-1	<u> </u>		-1-1-1
		Ċ) 2	25 5	50 7	5 1 CI	00 12 RCUMF	25 15 ERENT	50 11 [[AL]	75 20 POSIT	00 21 10N.	25 25 THET <i>I</i>	50 27 N	7 5 3	00 3:	25 3t	30 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1695

XZLB

ALPHA

MACH

٢	Р	1 2	ľ	'n	A	٦
	\mathbf{r}	1 /	١U	H 1	4	- 1

PARAMETRIC VALUES

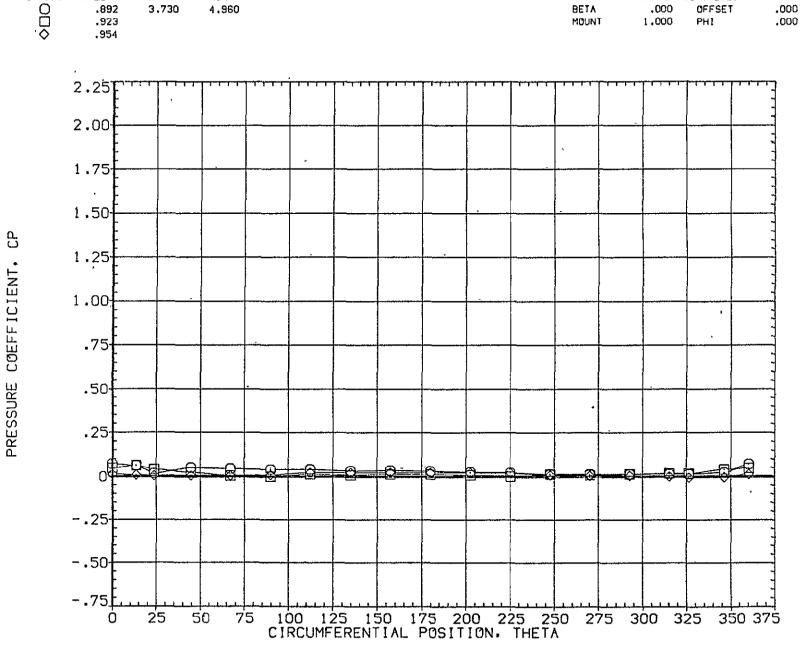


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1696

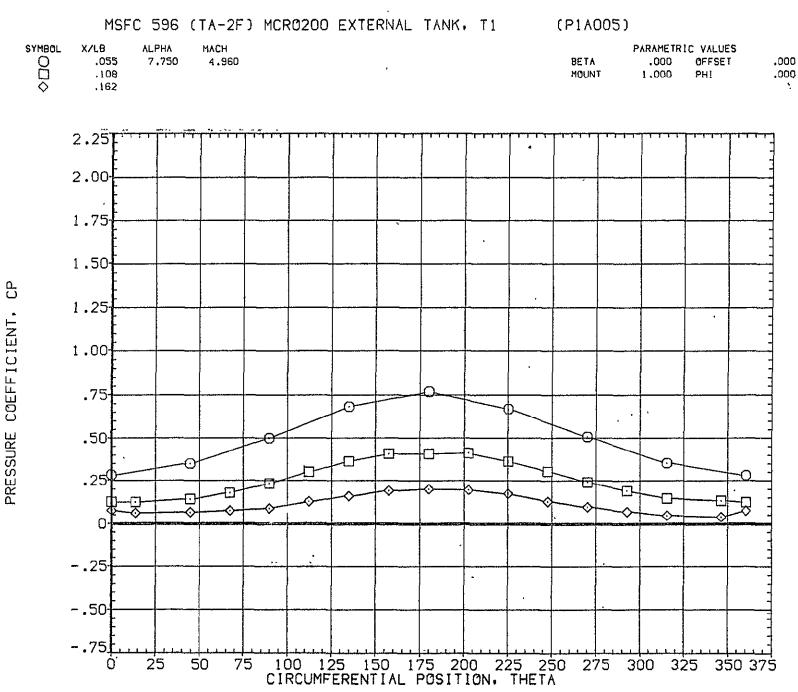


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1697

X/L8

ALPHA

MACH

(P1A005)

PARAMETRIC VALUES

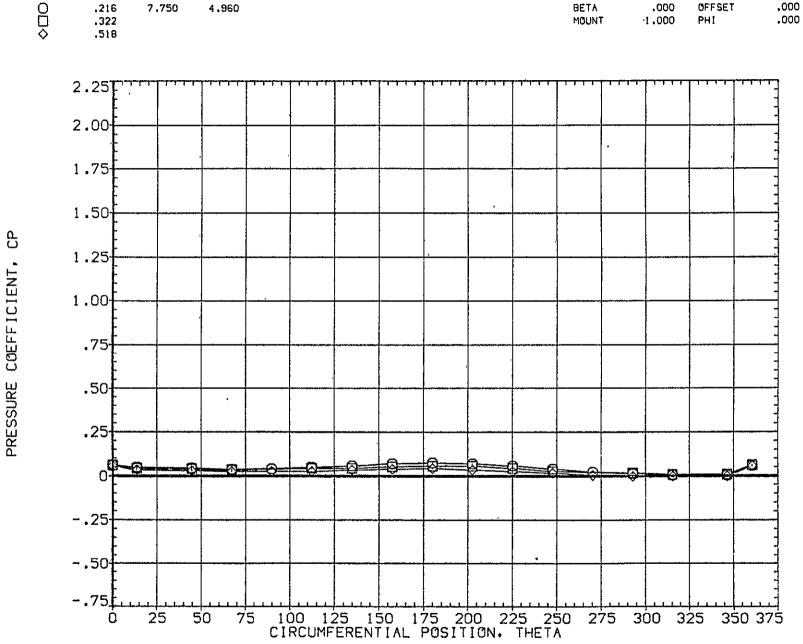
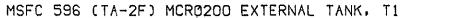


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1698



(P1A005)

SYMBOL	X/LB	ALPHA	MACH			PARAMETR	IC VALUES	
000	.610 .735 .860	7.750	4.960		ETA DUNT	000. 1.000	OFFSET PHI	.000 .000

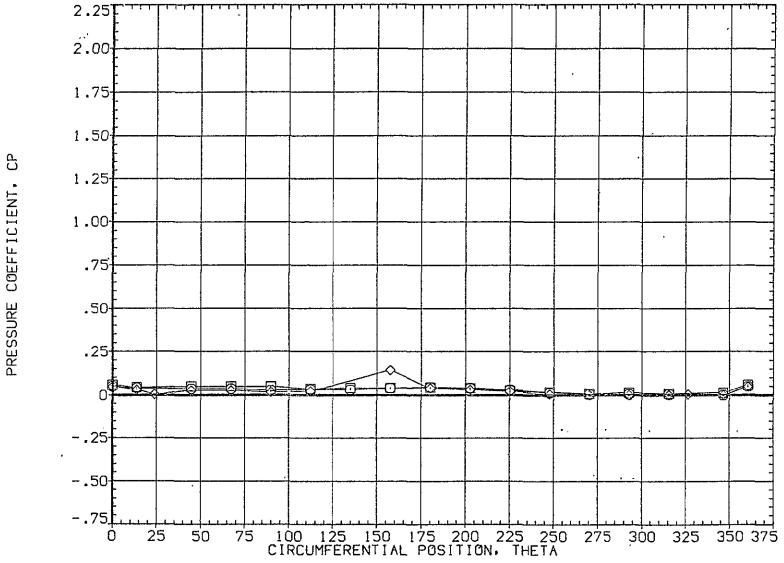


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1699

X/LB

ALPHA

MACH

(P1A005)

PARAMETRIC VALUES

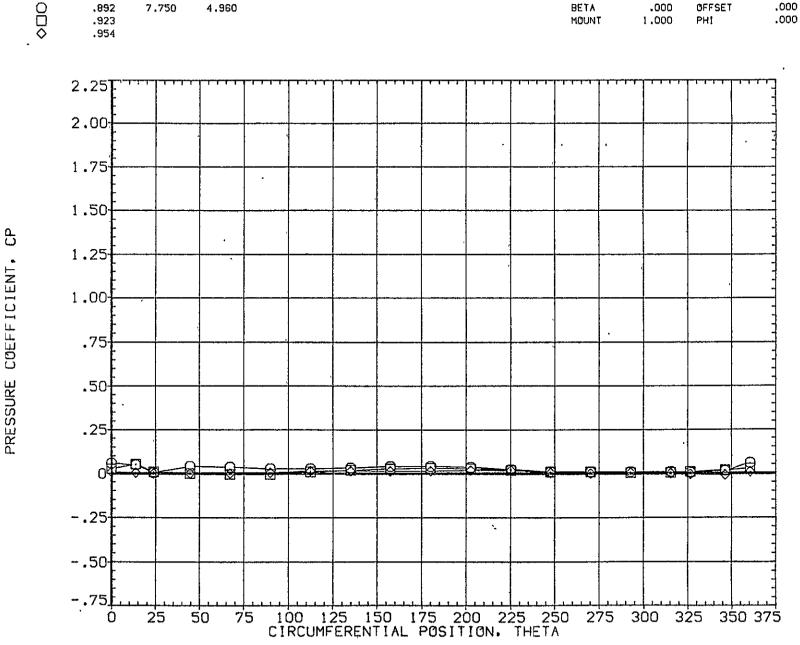


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1700

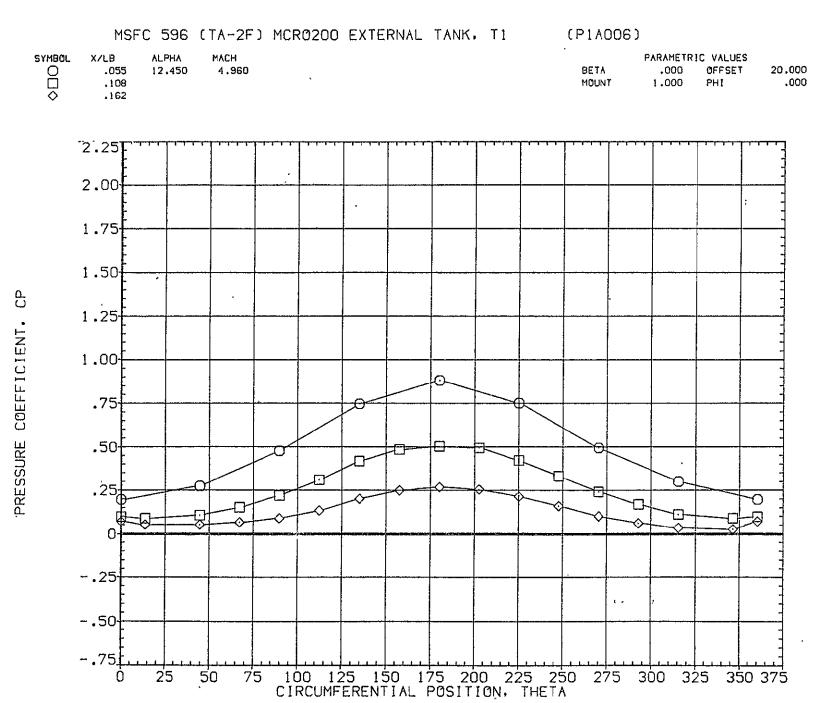


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1701

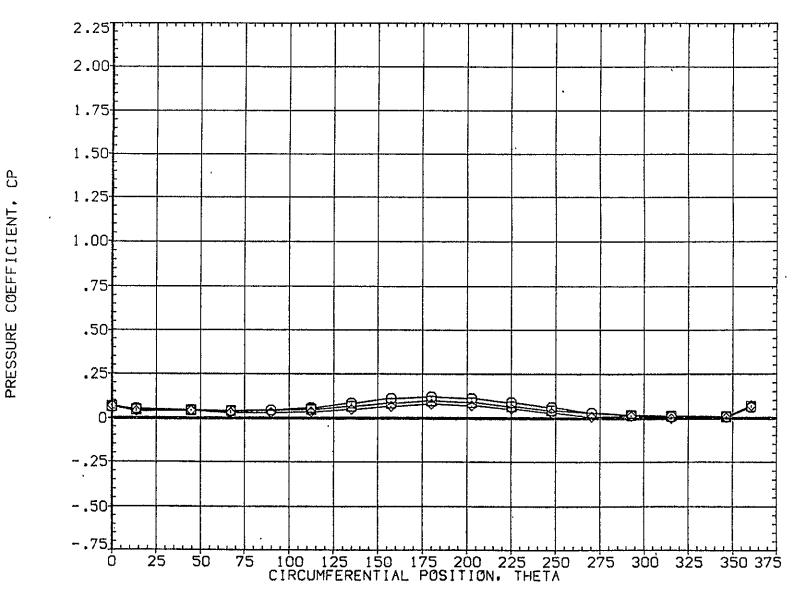
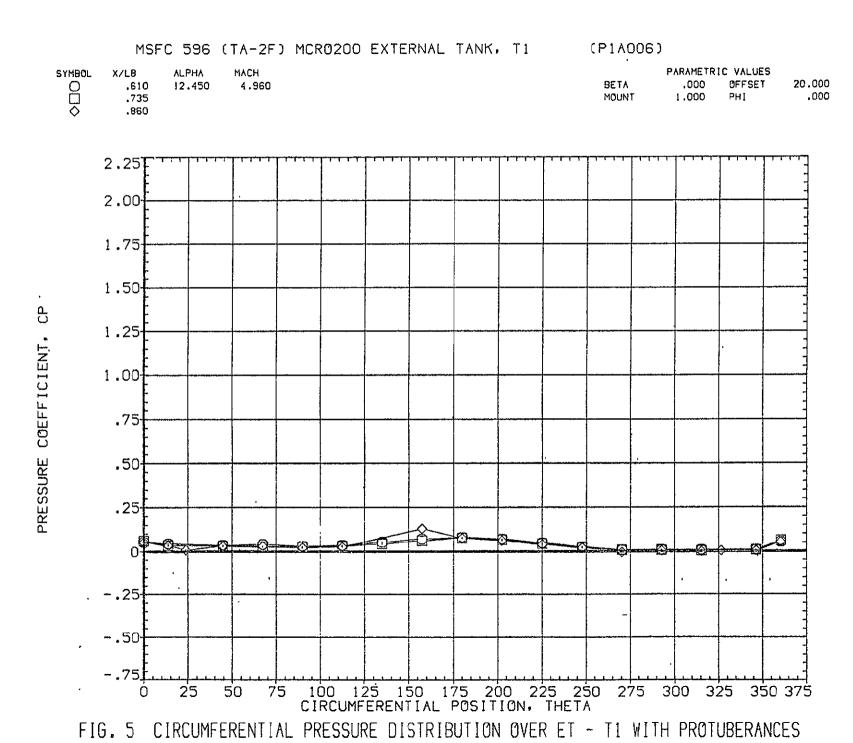


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1702



PAGE 1703



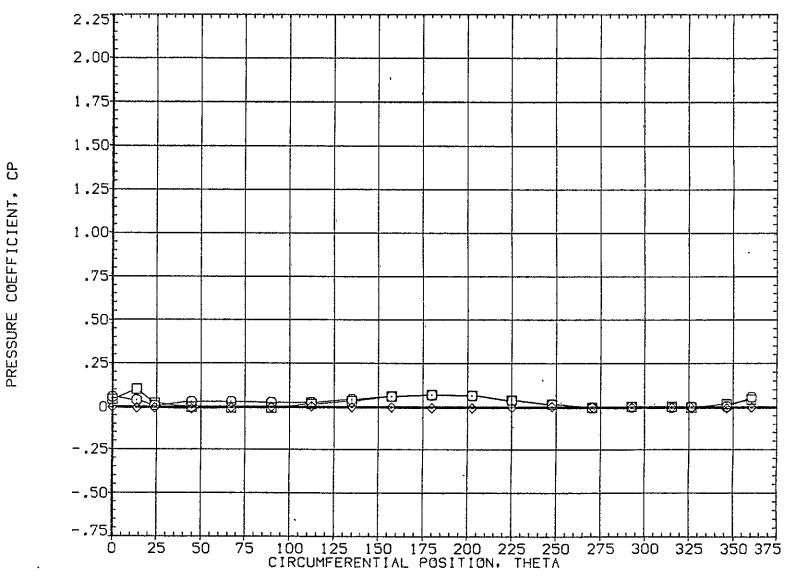


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1704

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A007)

SYMBOL	X/LB	ALPHA	MACH	PARAMETR	PARAMETRIC VALUES				
0	.055	16.470	4.960	BETA .000	OFFSET	20.000			
ŏ	.108			MOUNT 1.000	PHI	.000			
\Diamond	.162								

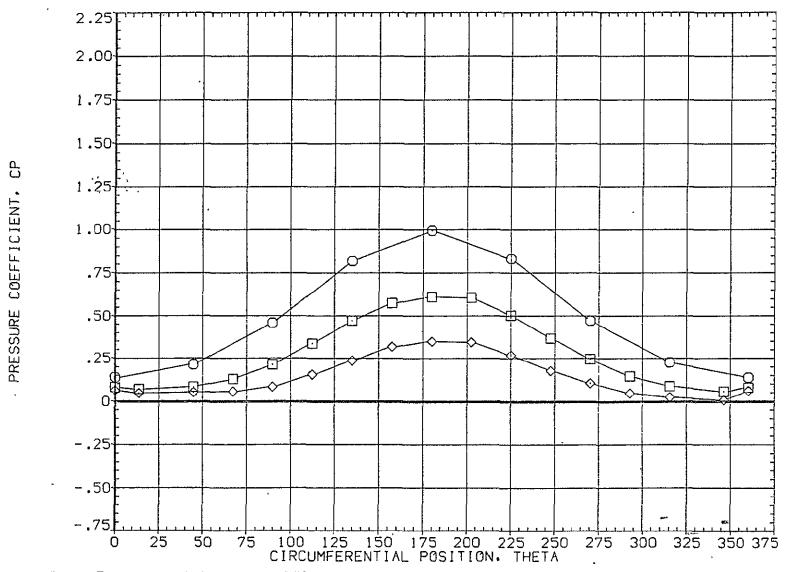


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1705





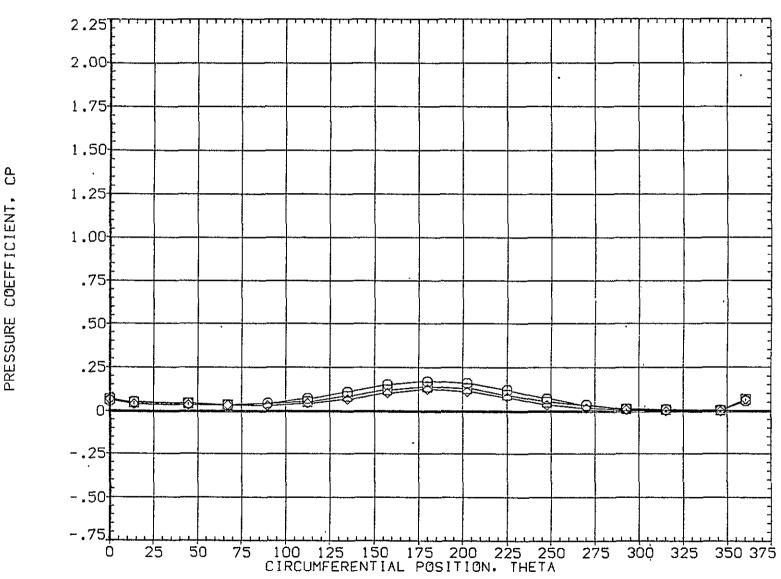


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1706



(P1A007)

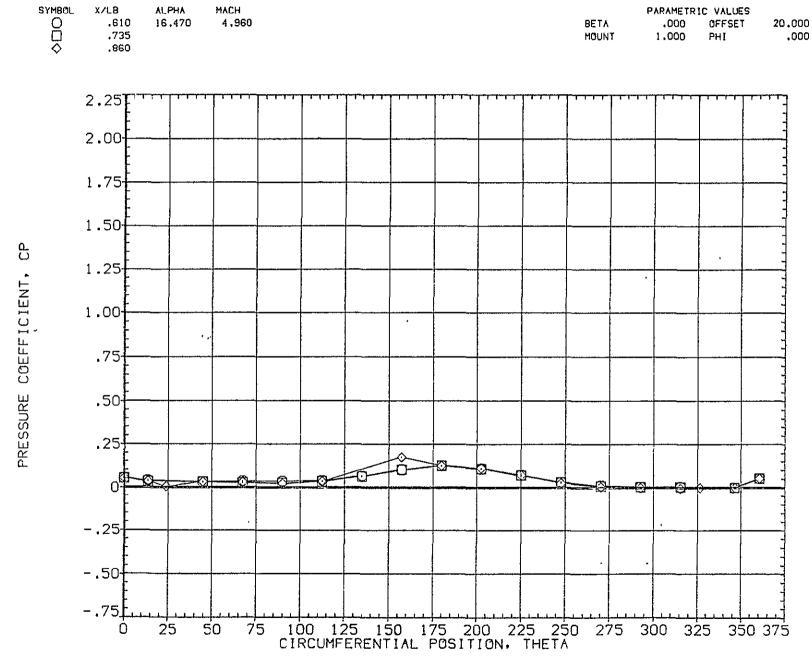


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1707

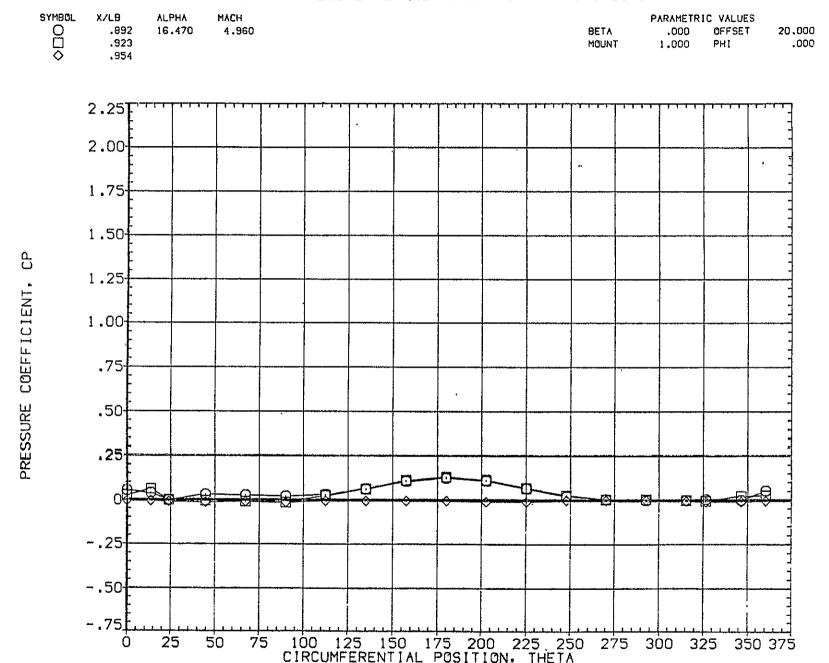


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1708

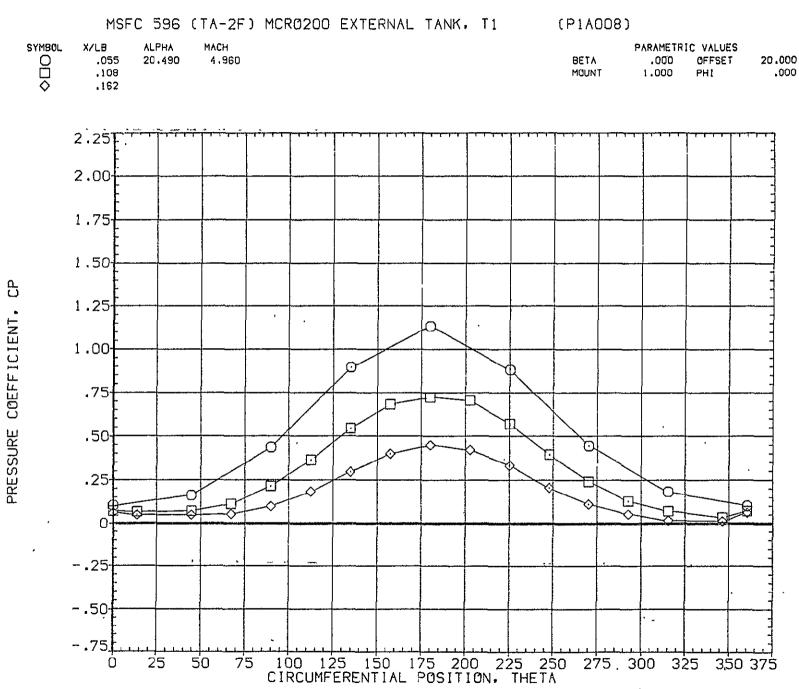


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1709

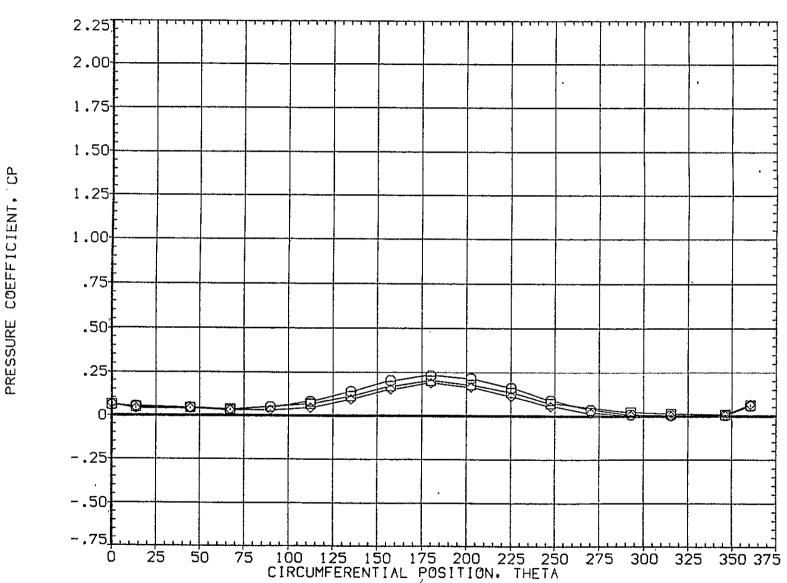
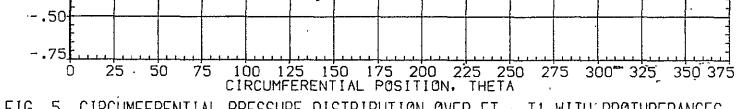


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1710



-.25

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET ~ T1 WITH PROTUBERANCES.

PAGE 1711

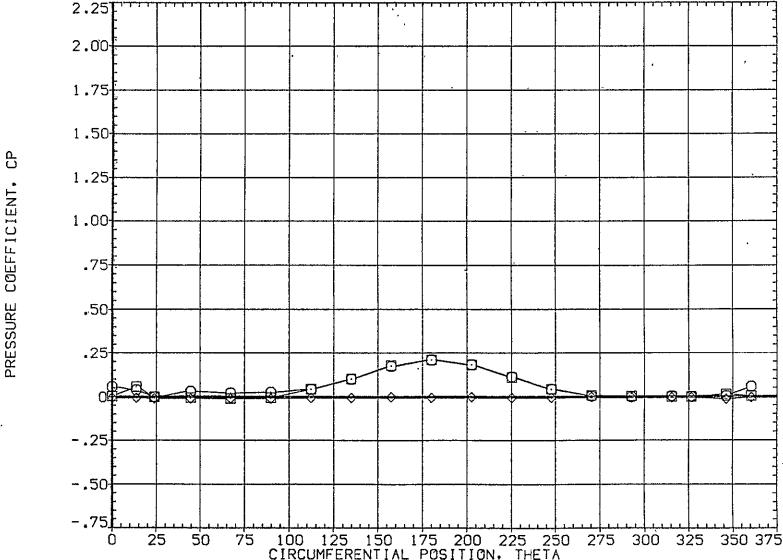


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1712



SYMBOL	X/LB	ALPHA	MACH	PARAMETR	IC VALUES	
Q	.055	24.510	4.960	BETA .000	OFFSET	20.000
	.108			MOUNT 1.000	PHI	.000
\Q	.162					

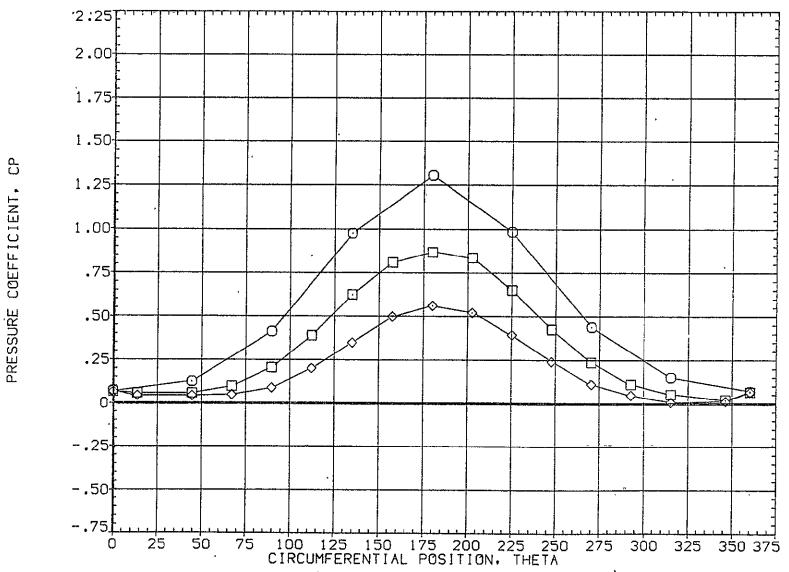


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1713

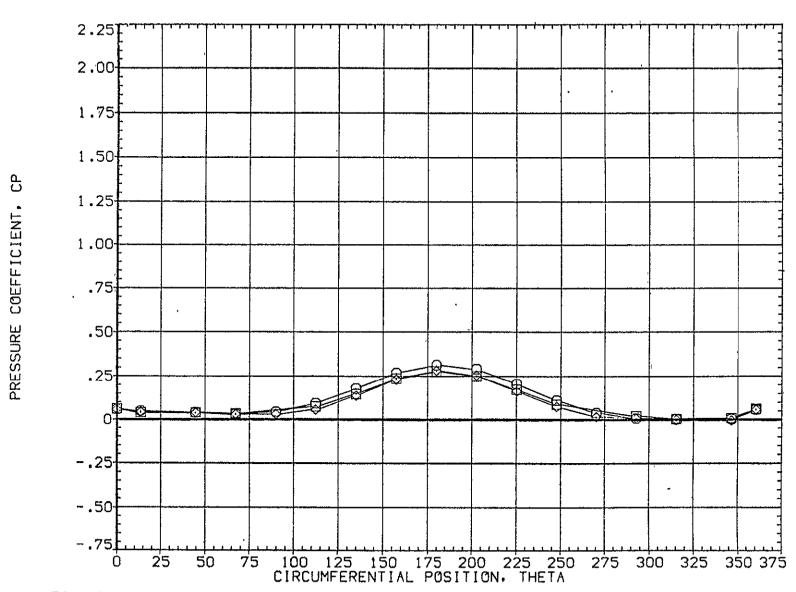


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1714

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 24.510 .610 4.960 BETA .000 OFFSET 20,000 .735 MOUNT 1.000 PHI .000 .860 2.251 2.00 1.75 1.50-9 1.25 COEFFICIENT, 1.00-.75 PRESSURE .50 .25 - .25 -.50 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

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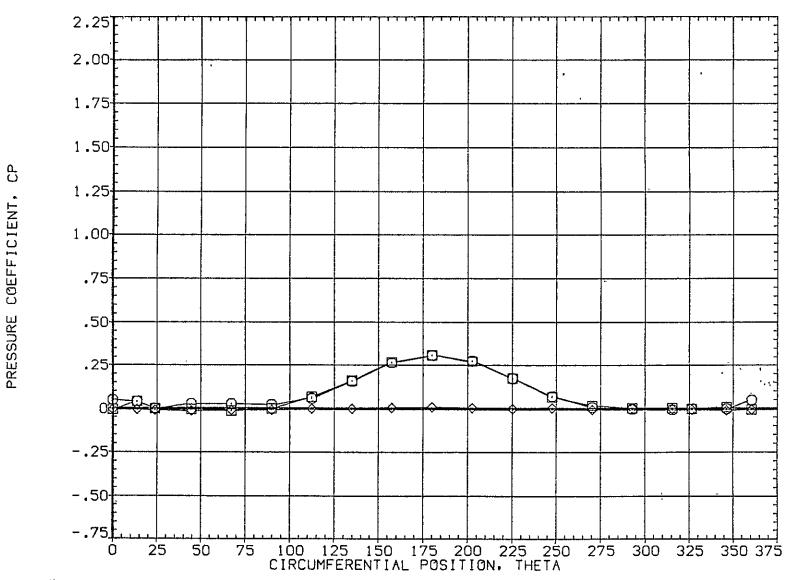


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1716

(P1A010)

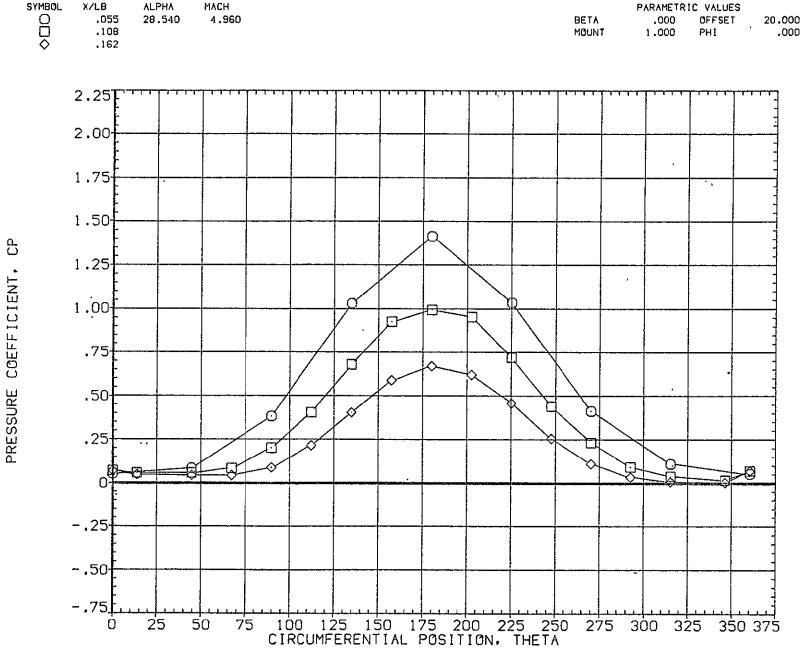


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



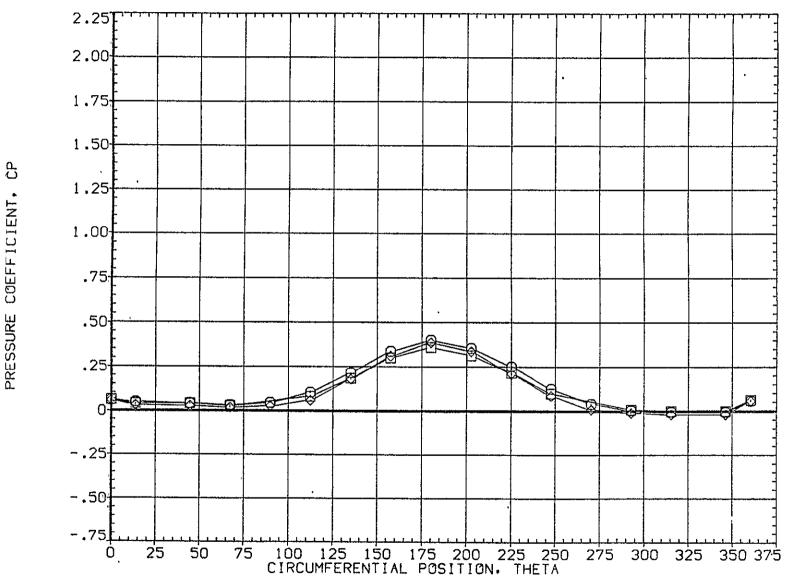


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE . 1718

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 .610 28.540 4.960 BETA OFFSET 20.000 .735 MOUNT 1,000 PHI ,000 .860 2.25 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA. 25 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

(P1A010)



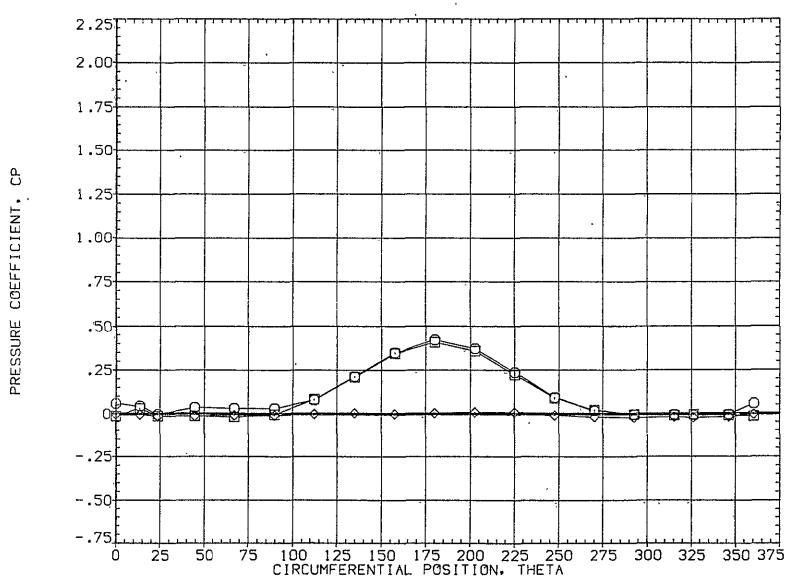


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1720

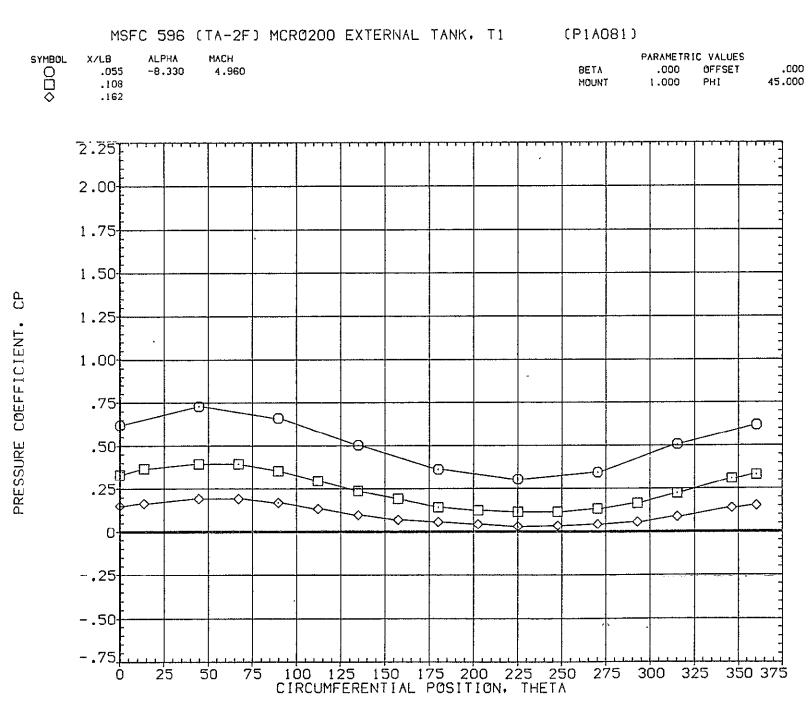
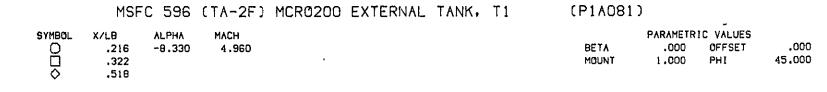


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1721



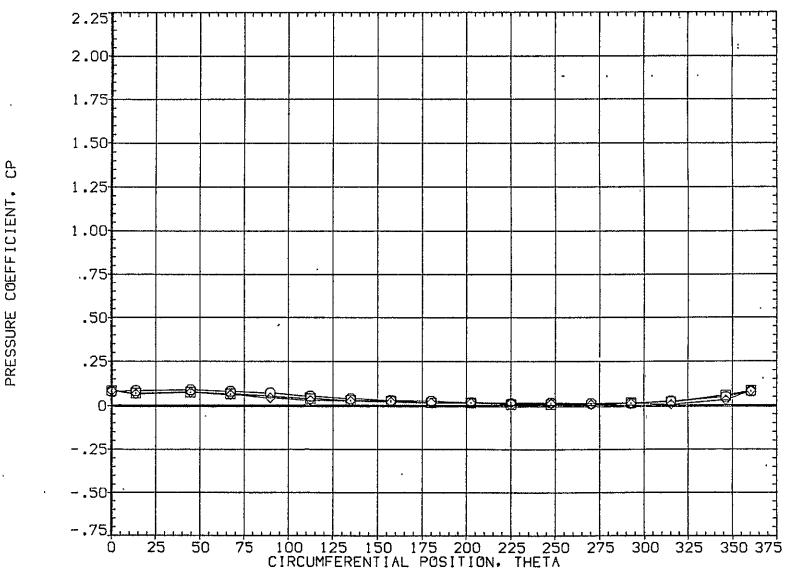


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1722

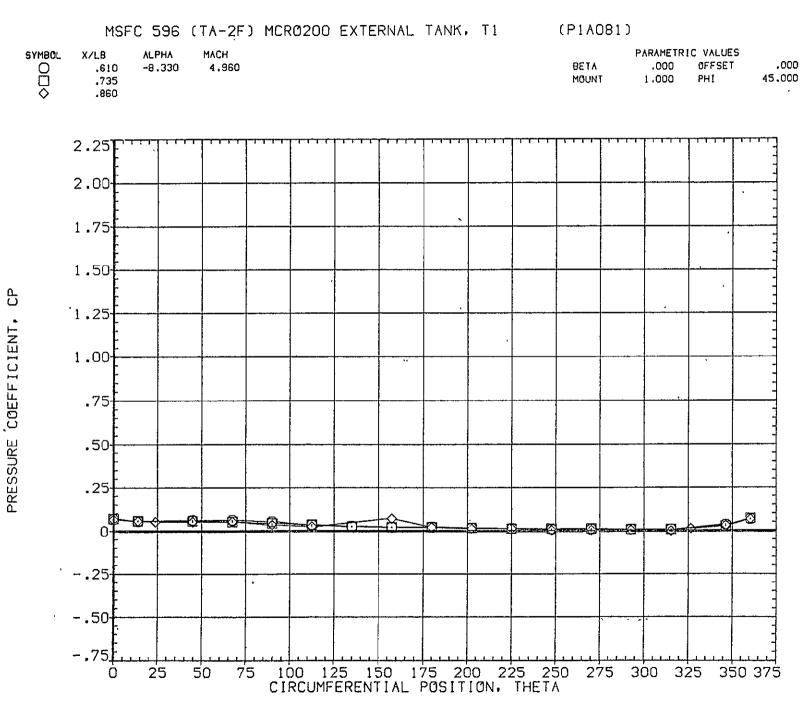


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1723

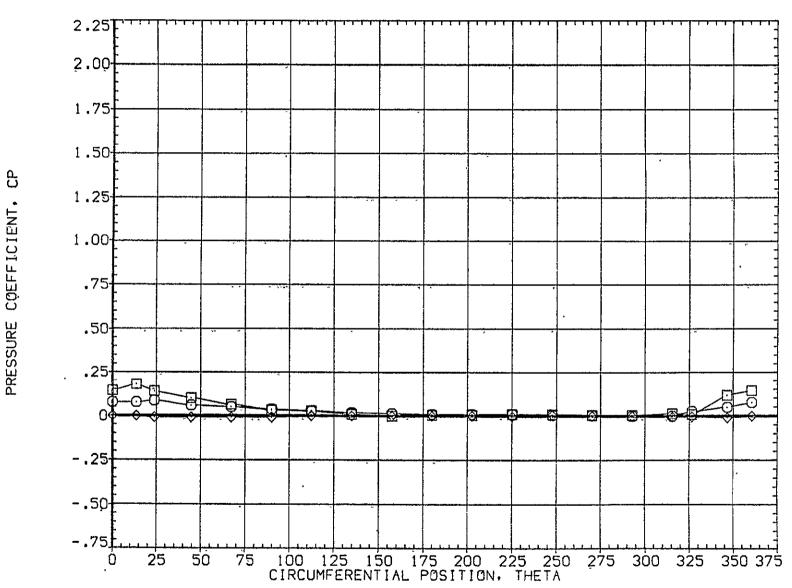


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1724

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1725





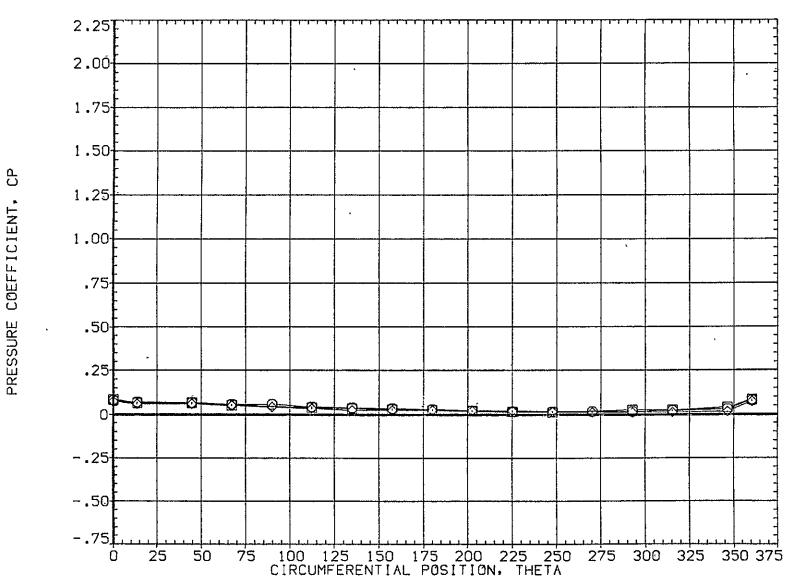


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1726

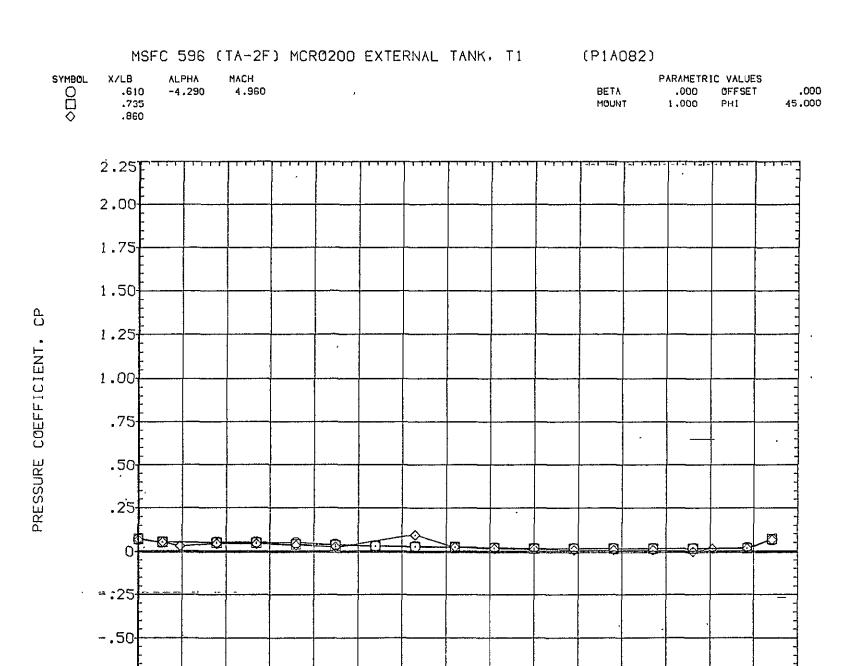


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T.1 WITH PROTUBERANCES
PAGE 1727

CIRCUMFERENTIAL POSITION, THETA

50

25

75

100 125 150 175 200 225 250 275 300 325 350 375



ALPHA

-4.290

MACH

4.960

SYMBOL

X/LB

.892

(P1A082)

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

000 45,000 .923 MOUNT 1.000 PHI .954 2.25T 2.00 1.75 1.50 1.25 COEFFICIENT. 1.00 .75 PRESSURE .50-.25 -.25 -.50 100 125 150 175 200 225 250 275 300 325 350 375 25 50 75 CIRCUMFERENTIAL POSITION. THETA

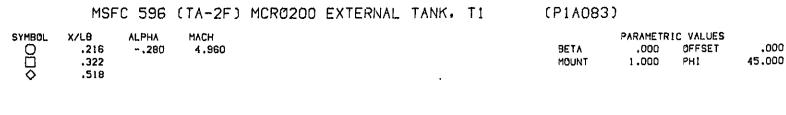
FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1728

MSEC	596	(TA-2F)	MCRM200	EXTERNAL	TANK.	T 1
1,0,0		\ 11\ E 1	1010200		1 1 1 1 1 1 1 1 1 1	, ,

(P1A083)

	X/LB		PHA	MACH								0571		PARAMETR	IC AYPRE	S
	.055 .108 .162	3	.280	4.960								BETA MOUN	Т	.000 1.000	OFFSET PHI	.06 45.00
									,							
	2.25		<u> </u>		7777	7	11111	 	1111	11777	7777	,	,	7		-1 1 1 - 1
	2.00	-						ļ					<u> </u>			
	1.75	-											-			
	1.50-				, <u></u> ,	-								-		
i	1.25															
·	1.00	-			4 VP4				,		,					
	.75	-												<u> </u>		
	.50)	 0		 •		-0		Θ							
	.25				 0-	-0-	0	 	<u> </u>	<u> </u>	<u> </u>			J		
	0	-				~	→	\langle	\$	\rightarrow		\		<u> </u>		<u>→</u> -
	25													-		
	50	· ·										· · · · ·				
	75 0	2		0 75		00 12 RCUMF			<u></u>		25 2		75 :	300 3	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1729



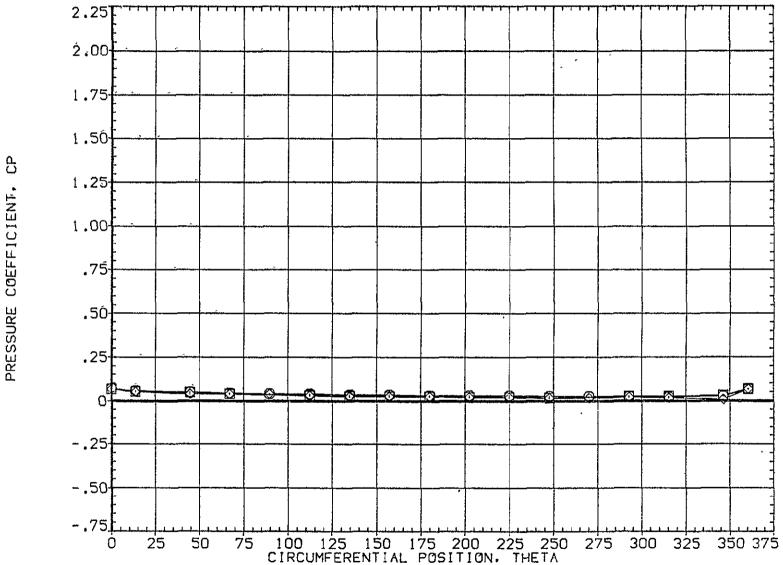


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1730

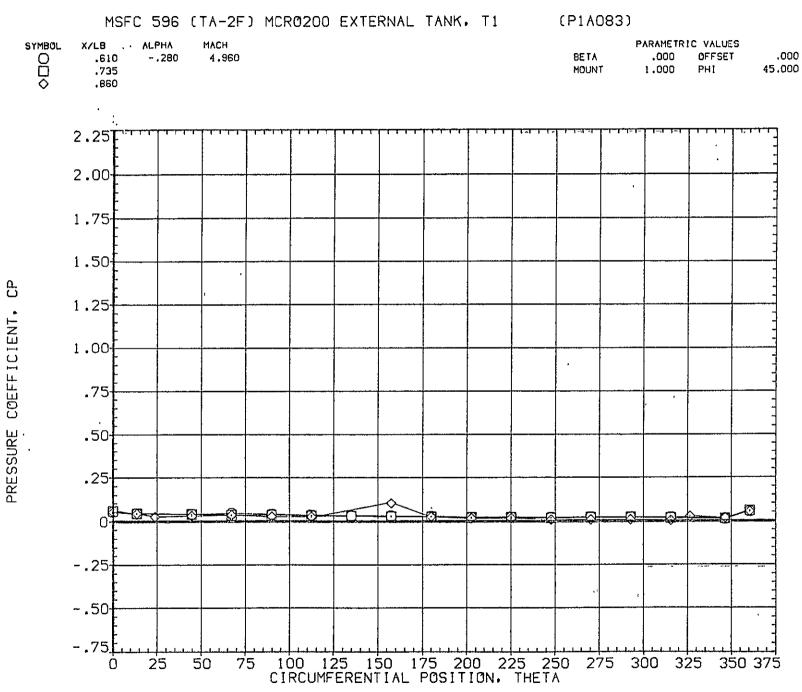


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1731

PARAMETRIC VALUES

ALPHA

MACH

SYMBOL.

X/LB

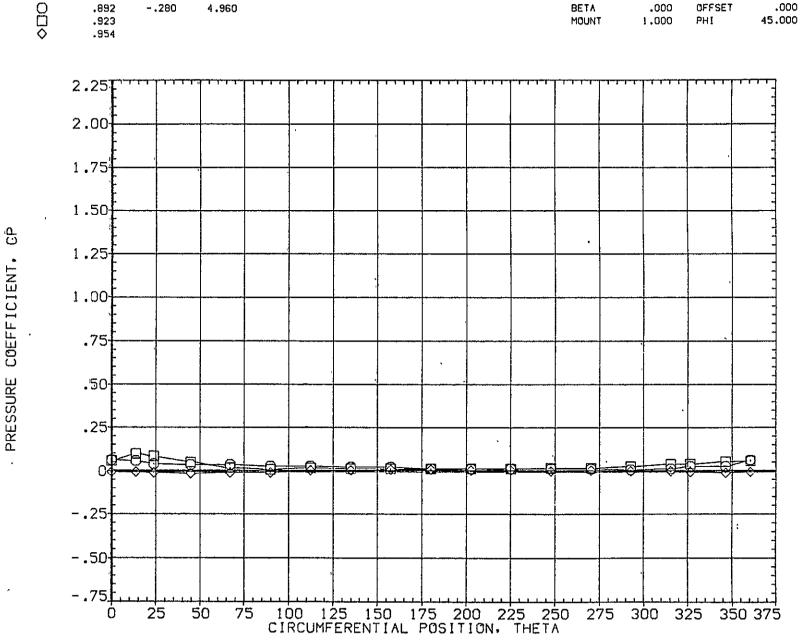


FIG. 5 ÇIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERÂNCES
PAGE 1732

MBOL	X/LB .05		РНА .730	MACH 4.960								BETA		ARAMETR	C VALUES OFFSET	
000	.10 .16											MOUN'	Г	1.000	PHI	45.
					•											
	2.25	F.	1	 	, , , ,	, , , , , ,	1,,,,,	1	7	 	17217121	 		1		- - -
	2.00	<u> </u>	ļ			1				ļ	<u> </u>	<u> </u>				
		-														+
	1.75	-														
	1.50	F							<u> </u>					,		
		<u> </u>														-
	1.25	E														-
	1.00	 -					ļ						,			-
	75	ŧ F														-
	.75	-)	0				
	.50-	<u>-</u>					0							-0-		<u>-</u>
	.25	p							-							•
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	25	-														
		 - - -														- - -
	50-	<u> </u>	,													-
	75					<u> </u>		-1-1-1-1								

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1733

X/LB

.216

ALPHA

3.730

MACH

4.960

BETA

PARAMETRIC VALUES

.000

OFFSET

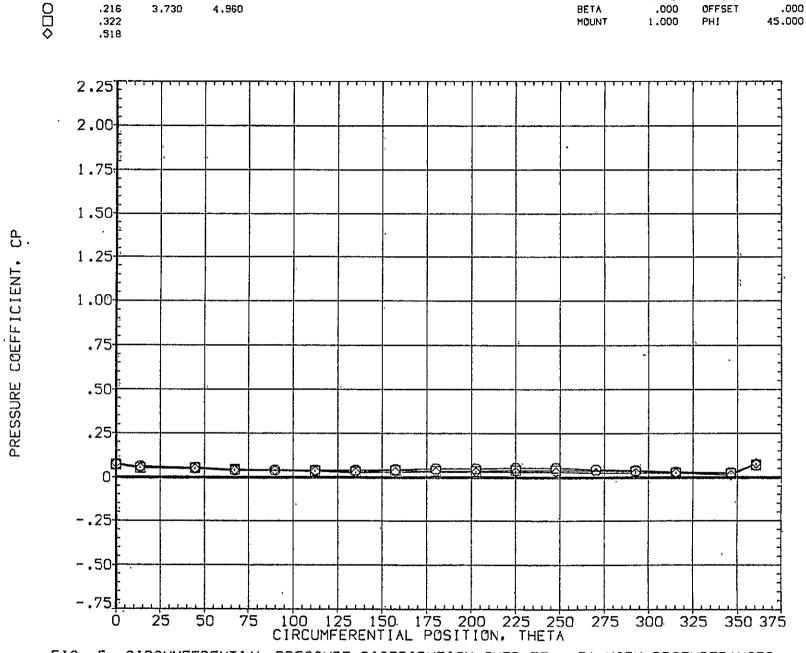


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1734

ALPHA

MACH

SYMBOL

X/LB

PARAMETRIC VALUES

PAGE 1735

000 .610 3,730 4.960 BETA .000 OFFSET .000 45.000 .735 MOUNT 1,000 PHI .860 2.25T 2.00 1.75 1.50 S 1.25 COEFFICIENT, 1:00 .75 PRESSURE .50-.25 -.25 -.50 -.75L 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50.

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



SYMBOL	X/LB	ΛLPHΛ	MACH	PARAMETR	IC VALUES	
0	.892	3.730	4.960	BETA .000	OFFSET	.000
	.923			MOUNT 1.000	PH1	45.000
Δ.	954					

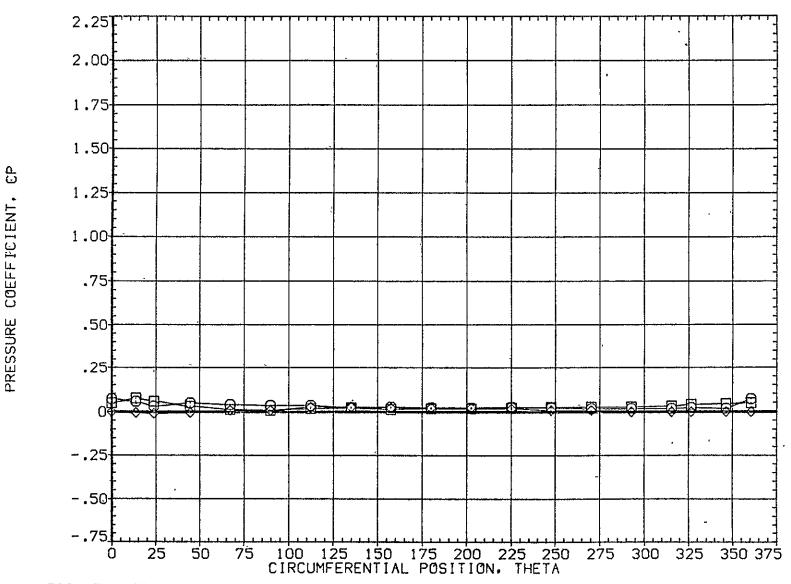


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1736

(P1A085) MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 PARAMETRIC VALUES ALPHA MACH SYMBOL X/LB .000 000 OFFSET BETA .000 .055 7,750 4.960 MOUNT 1.000 PHI 45.000 .108 .162 2.25 2.00 1.75 1.50-ರಿ 1.25 PRESSURE COEFFICIENT, 1.00 .75 .50 -.25 -.50 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA 25 50 75

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1737

SYMBOL	X/LB	ALPHA	MACH	PARAMETRI	C VALUES	
ည္က	.216	7.750	4.960	OOO. ATBE	OFFSET	.000
	.322			000.1 TNUOM	PHI	45.000
\Diamond	.518					

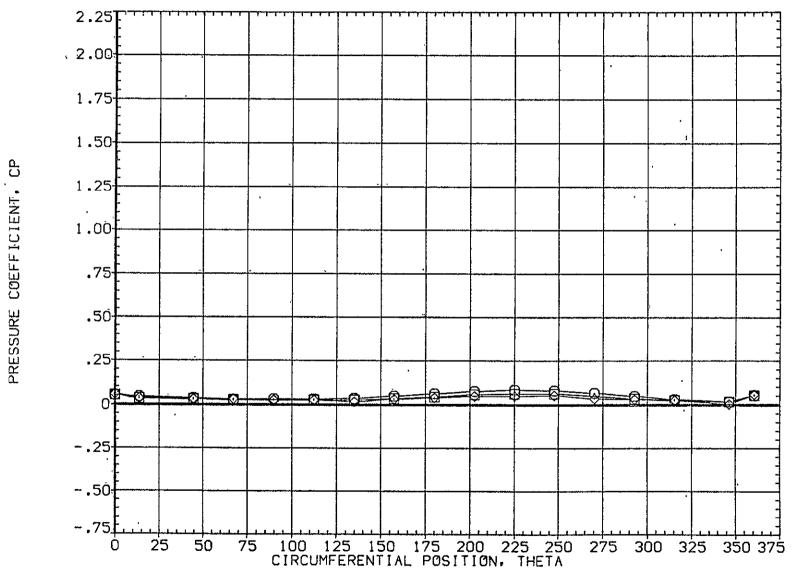


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1738

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1739

-.50-

- 75上

25

50

75

X/LB

ALPHA

MACH

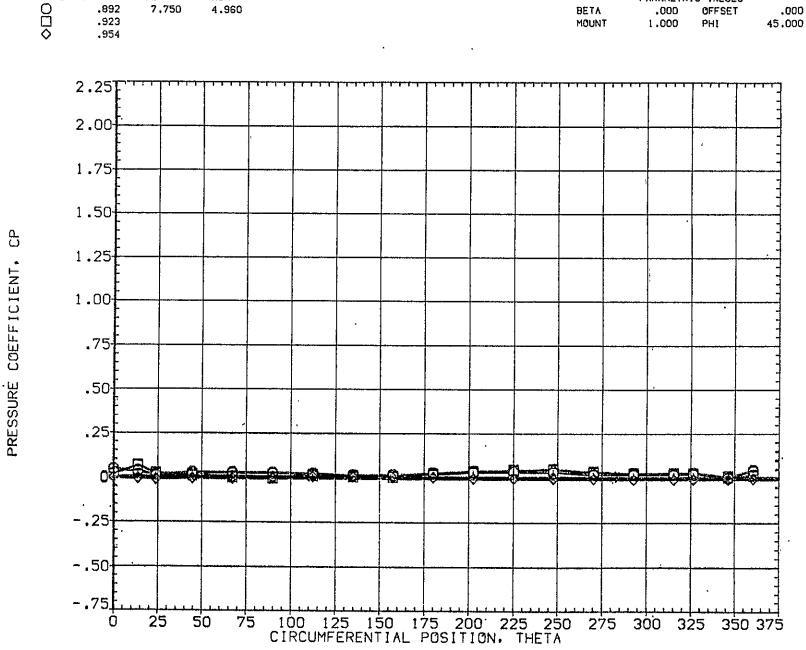


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1740

MSEC	596	(TA-2F)	MCBG200	EXTERNAL	TANK.	T 1
TIOF C	JJO	ししひてとによ	TURUZUU		I AININ •	1 1

_	_	4 4	~	_	_	
- (Р	1 A	м	Ж	~	7

SYMBOL	X/LB	ALPHA	MACH		PARAMETR	IC VALUES	
Q	.055	12,450	4.960	BETA	.000	OFFSET	20.000
1 1	.108			MOUNT	1,000	PHI	45.000
\vdash	162						

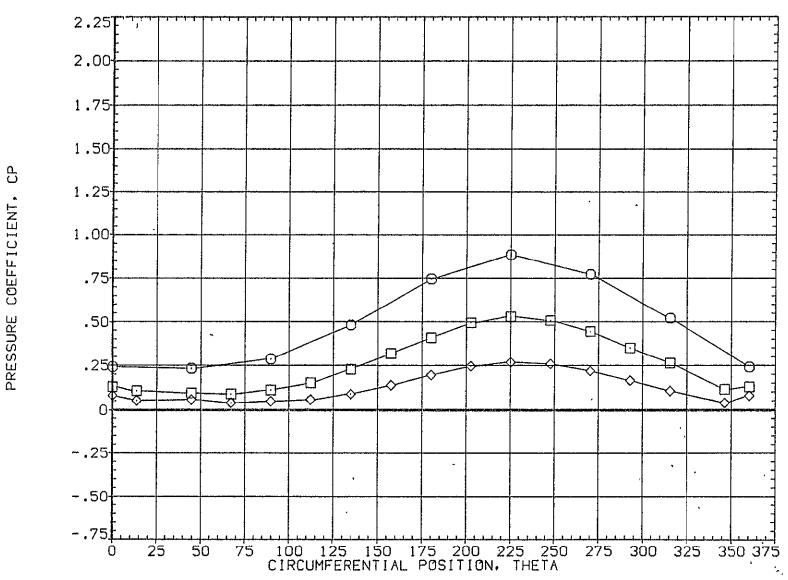


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1741

SYMBOL	X/LB	ALPHA	, WYCH			PARAMETR	IC VALUES	
Q	.216	12,450	4.960		BETA	.000	OFFSET	20.000
	,322		•		MOUNT	1.000	PH!	45.000
\Diamond	.518							

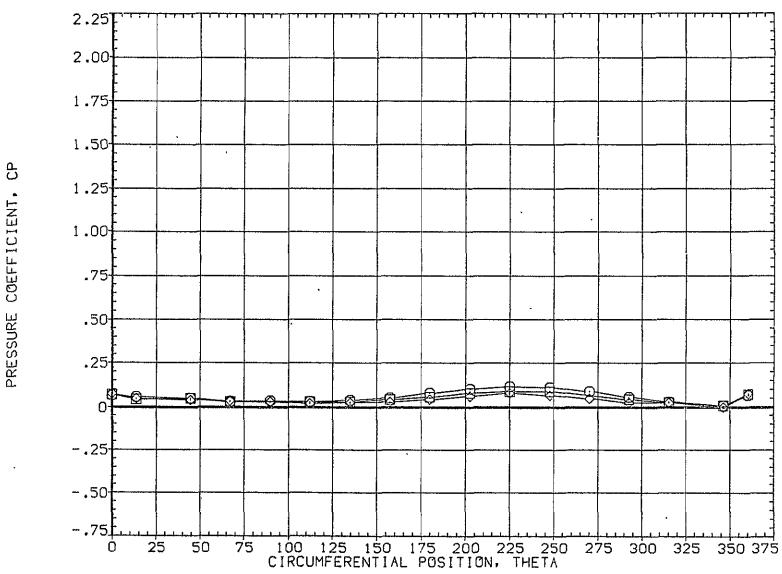


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1742

MSEC	596	(TA-2F)	MCRAZOO	EXTERNAL	TANK.	T t	

SYMBOL X/LB

ALPHA

(P1A086)

	X/LB ,610 ,735	0 12 5	.450	MACH 4.960								BETA MOUNT		.000 1.000	OFFSET PHI	2
>	.860	0														
	2.25		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7-1 7-1-1		7-1-1-	1-1-1-1	 	7	 	-	,,,,,		, , , , , , , , , , , , , , , , , , , 		
	2.00-	-			·					<u> </u>			-			
	1.75	- - -			. <u></u>											
	1.50-															
	1.25	-				,							· · · · · · · · · · · · · · · · · · ·			
	1.00							l		<u> </u>			····	· .	,	
	.75				<u></u>	 										<u></u>
	.50	-			<u>.</u>								<u>,</u>			
	.25	1				<u></u>										
	0			-0			-0-	8				0				0
	25	-											<u></u>			<u></u>
	50	-			·· ···						,					
	75		5 5	0 7		1	<u> </u>		 		25 25 THET	¦ 50 27		00 3	25 350	37

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T! WITH PROTUBERANCES
PAGE 1743

X/LB

.892

ALPHA

12.450

MACH

4.960

(P1A086)

BETA

PARAMETRIC VALUES

.000

OFFSET

20,000

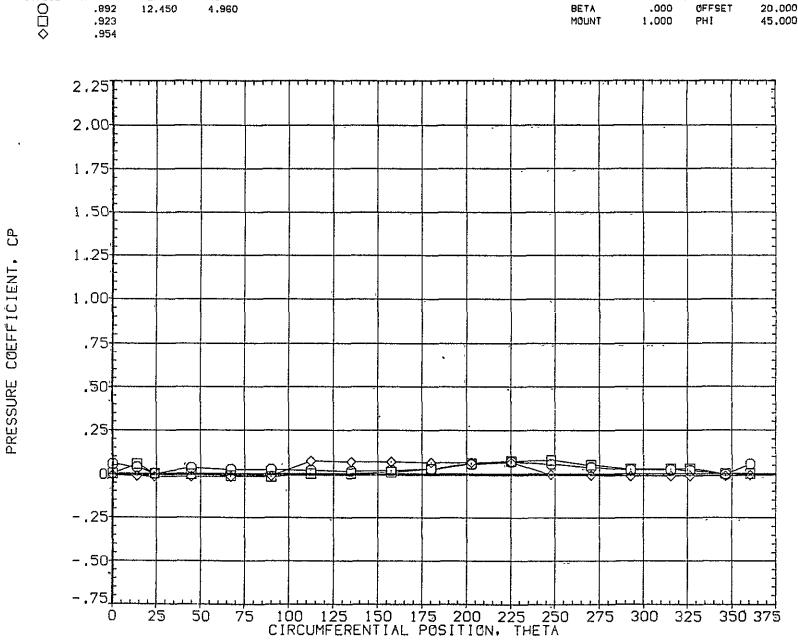


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1744



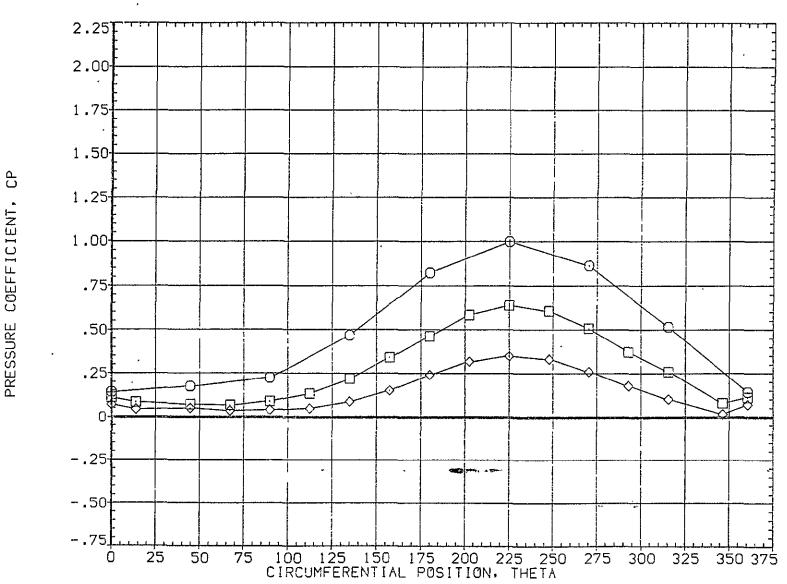
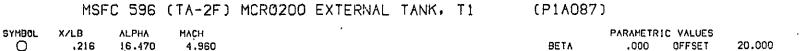


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1745



ΡΉΙ

45.000

1.000

MOUNT

0□◊

.322

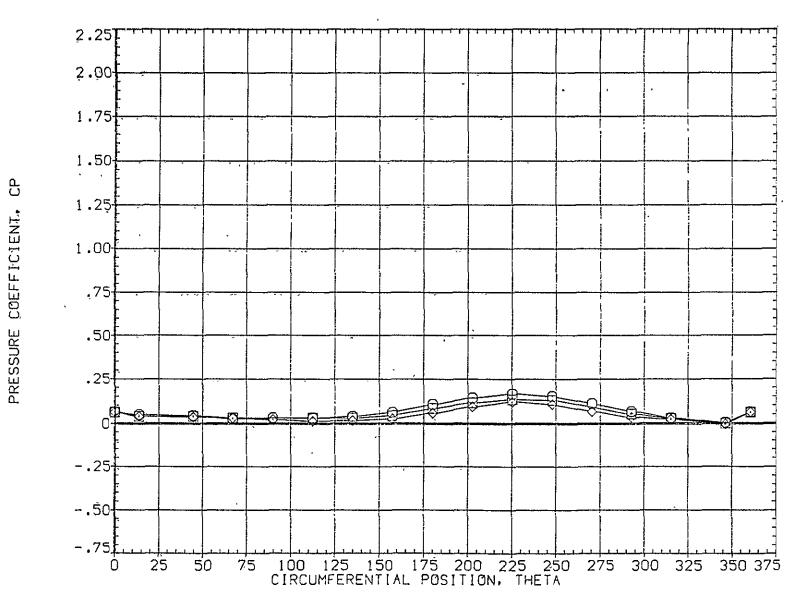


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1746

(P1A087) MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 **ALPHA** масн PARAMETRIC VALUES SYMBOL X/LB 000 20,000 .610 16,470 4.960 BETA .000 OFFSET 45.000 PHI .735 MOUNT 1.000 .860 2.25 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50--.25 -.50 150 175 200 225 250 275 300 325 350 375 25 50 75 100 125 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



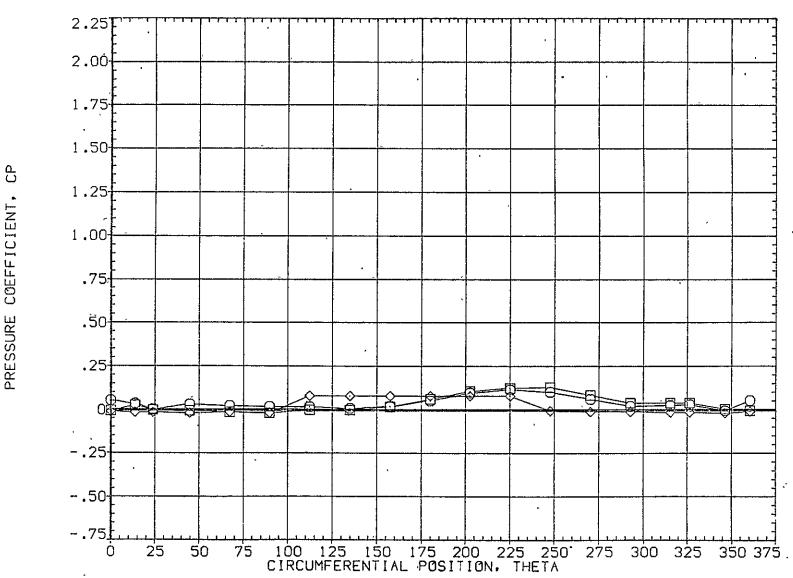


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1748

SYMBOL	X/LB	ALPHA	MACH	PARAMETR	PARAMETRIC VALUES			
Q	.055	20.490	4.960	BETA .000	OFFSEŢ	20.000		
	.10B			000.1 TAUOM	PHI	45.000		
\(\delta\)	.162							

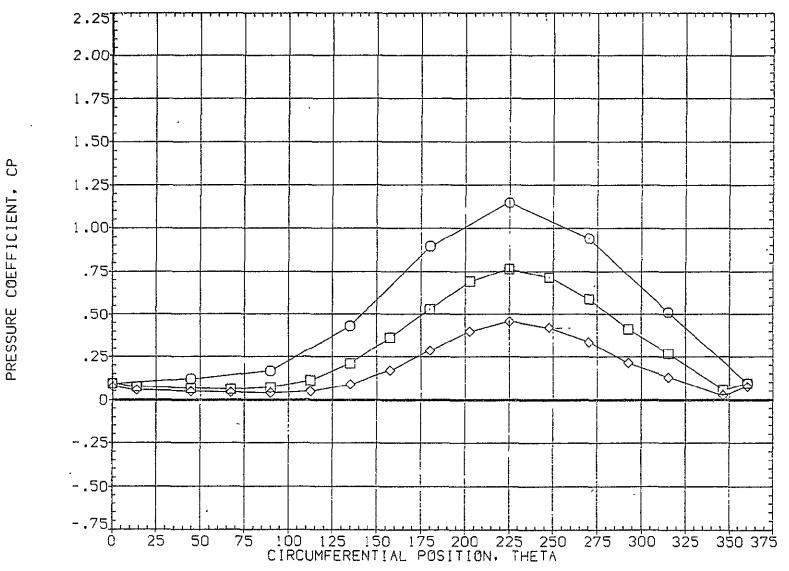


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





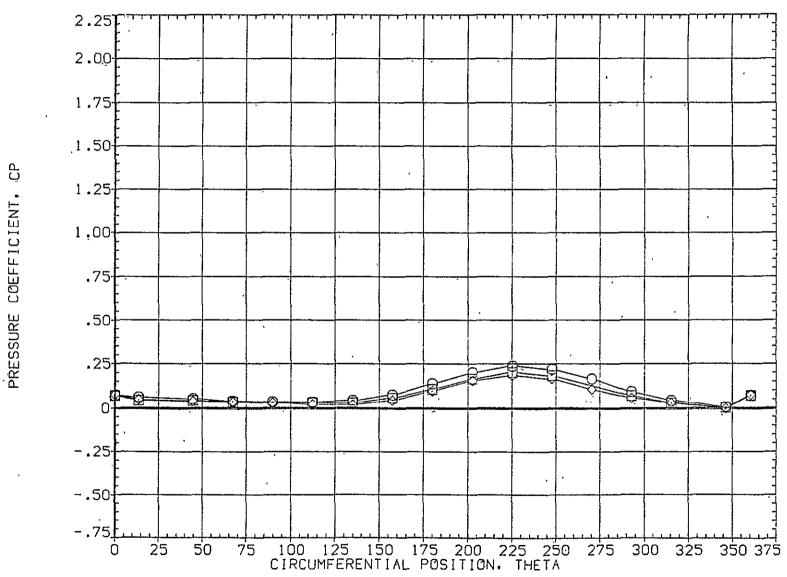


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1750

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1751

X/LB

ALPHA

MACH

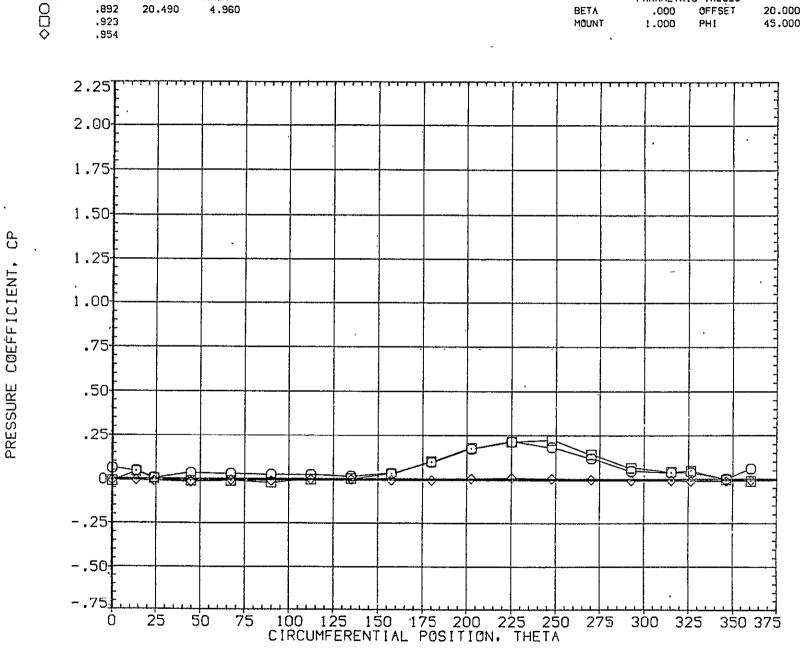


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1752

MSFC 596	(T 4 - 2 E)	MCDM200	CYTEDMAI	TANK	T 1	(P1A089)
מכנ שוכוו	ししハー乙にリ	PICKUZUU	EVIERNAL	4 \(\Omega\) \(\Om	1 1	(LIVO92)

SYMBOL	X/LB	ALPHA	MACH	PARAMETI	PARAMETRIC VALUES				
ဝ္	.055	24.510	4.960	DOO. ATBE	OFFSET	20.000			
	.108			MOUNT 1.000	PH!	45.000			
\sim	162								

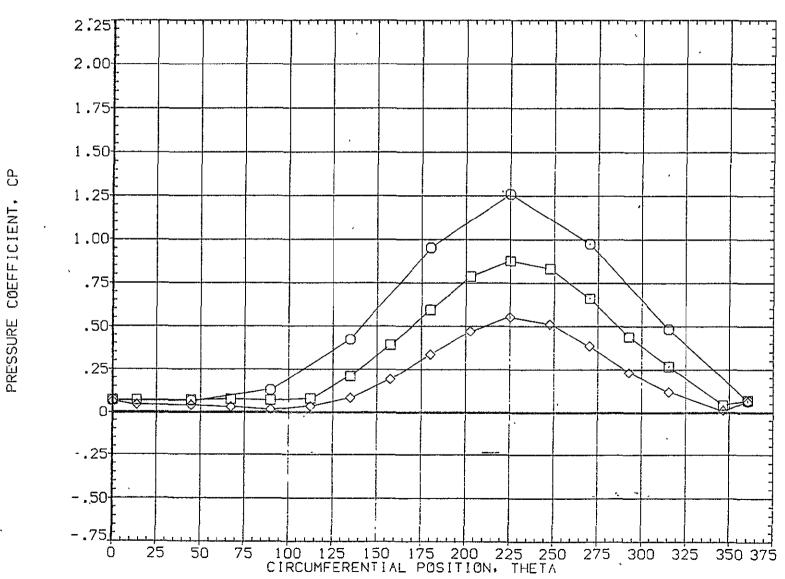


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1753

X/LB

ALPHA

MACH

(P1A089)

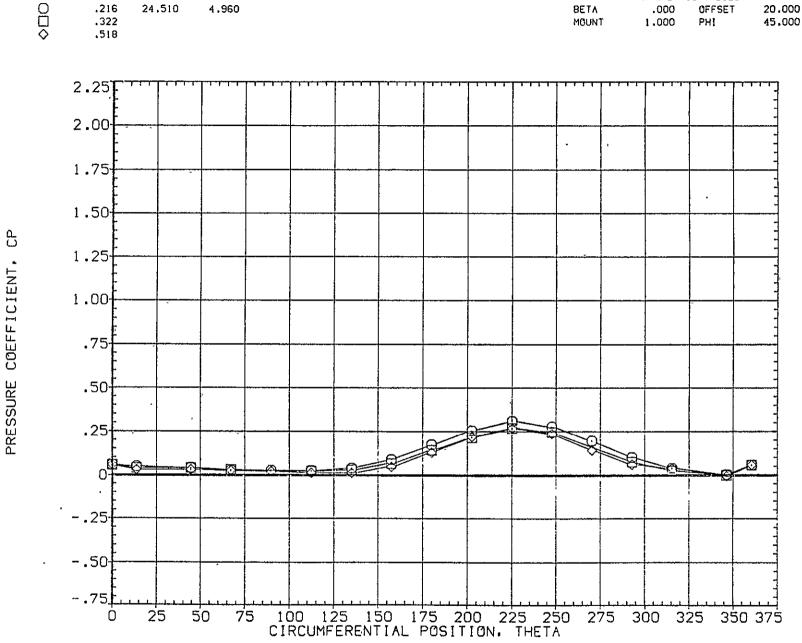


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1754

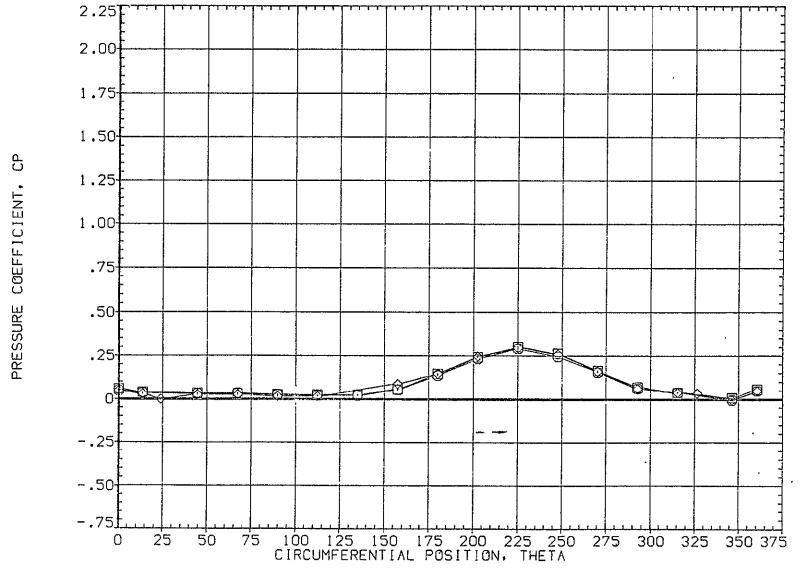


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

X/LB

.892

ALPHA

24.510

MACH

4,960

PARAMETRIC VALUES

OFFSET

20.000

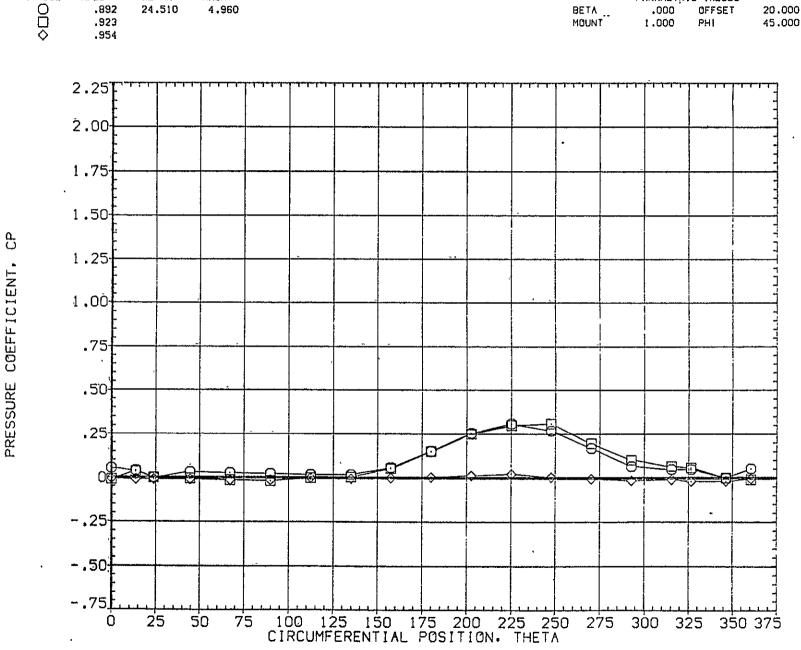
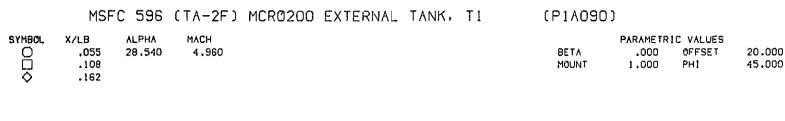


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1756



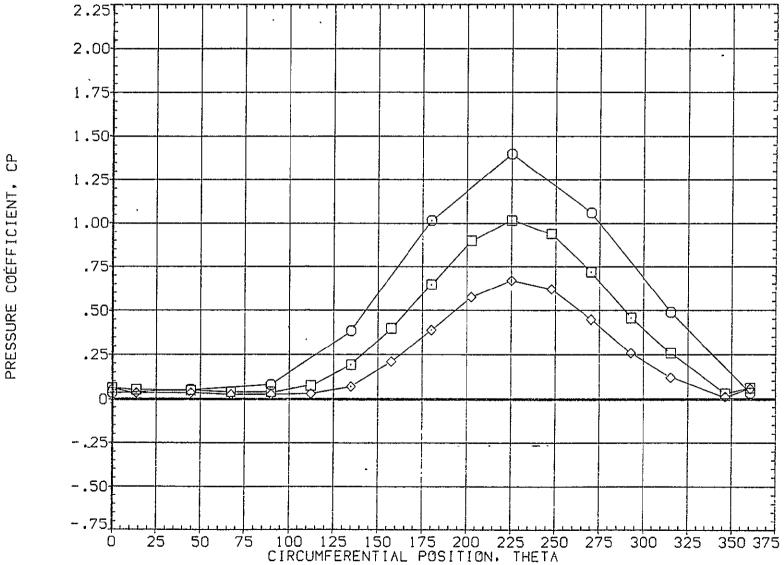


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1757

ALPHA

MACH

SYMBOL

X/LB

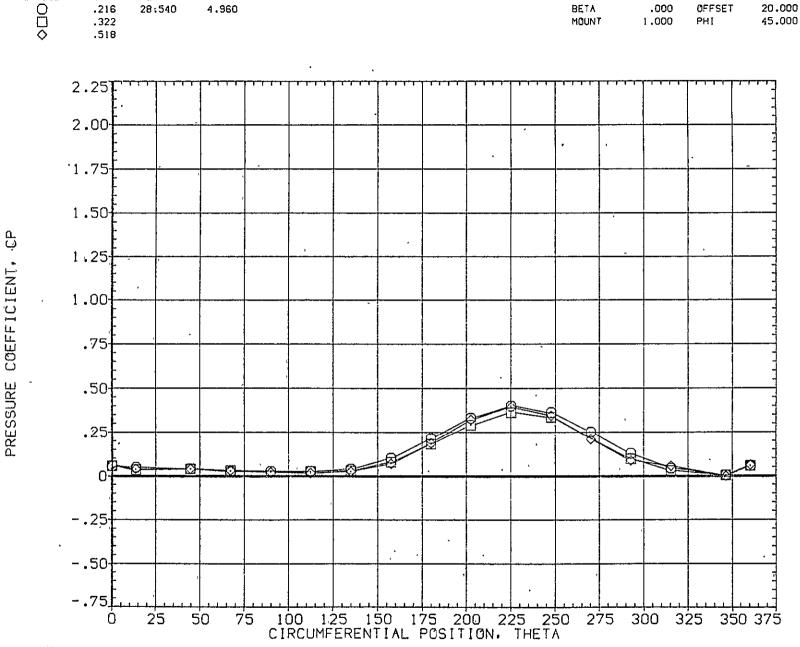


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1758

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1759





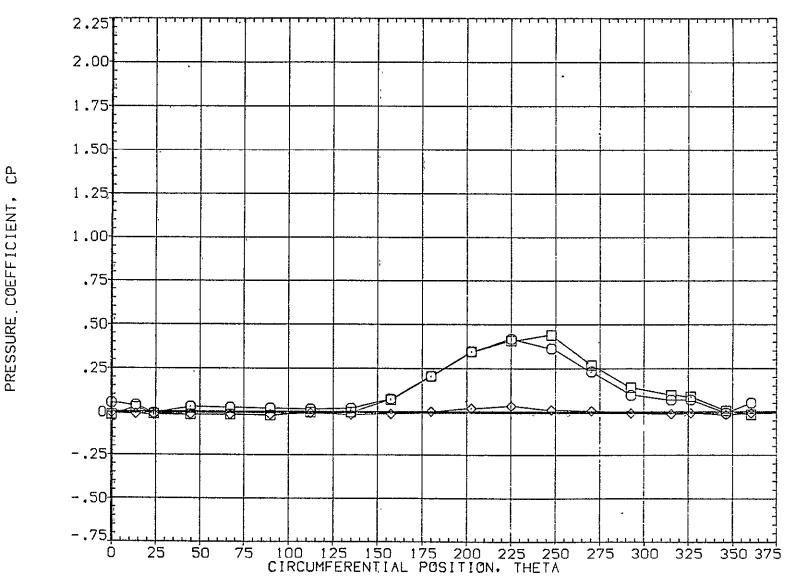


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1760

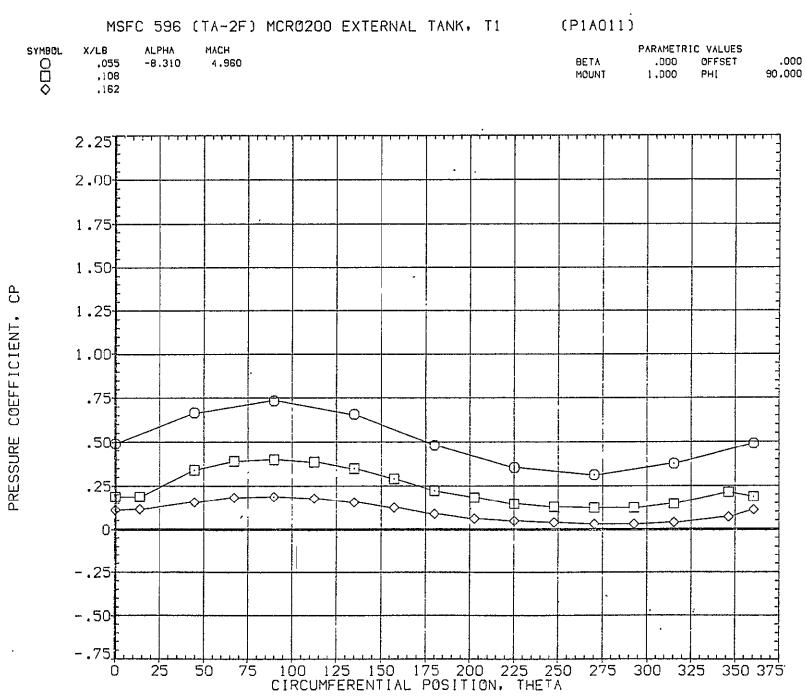
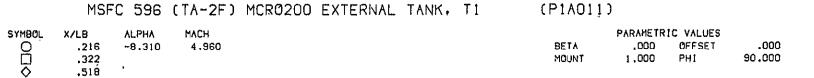


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1761



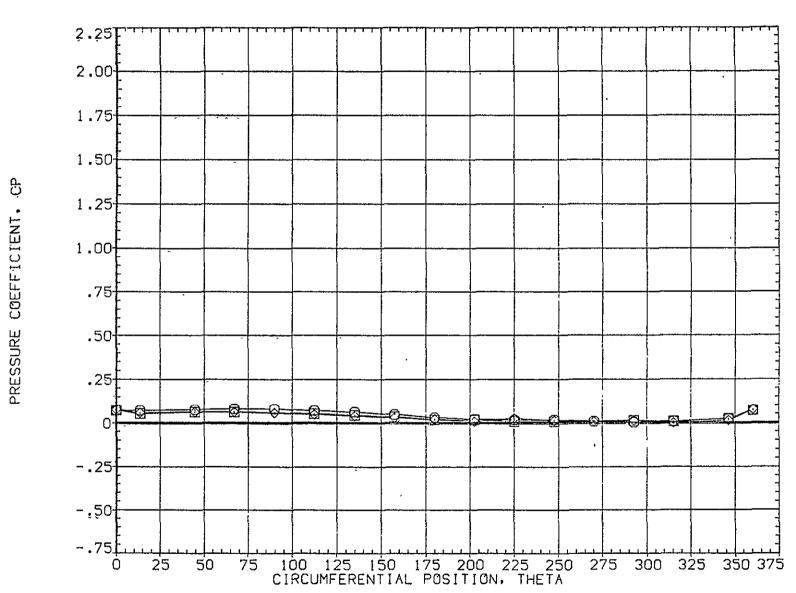


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1762

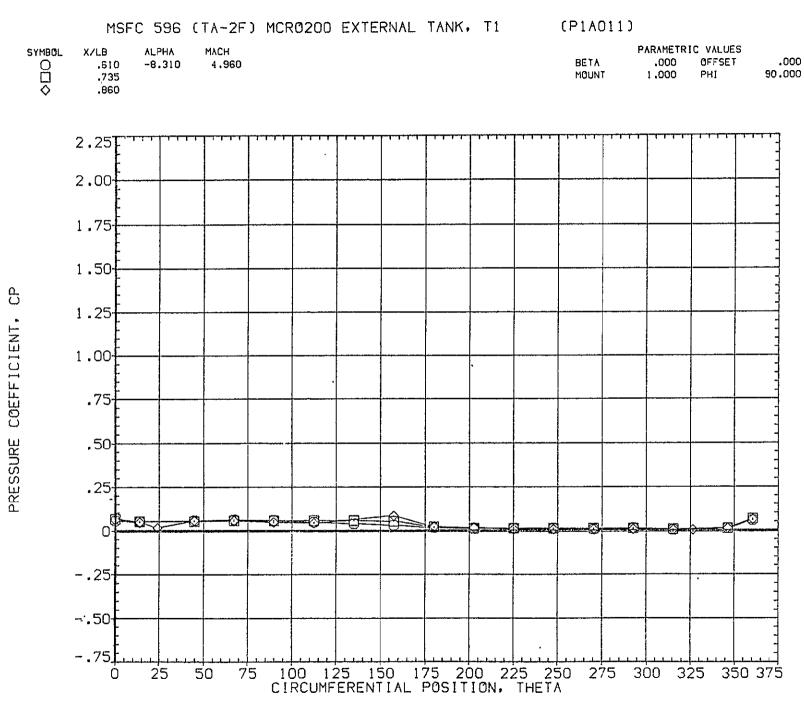
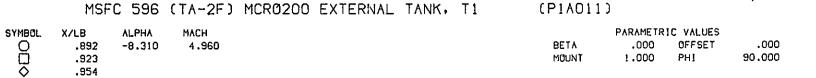


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES



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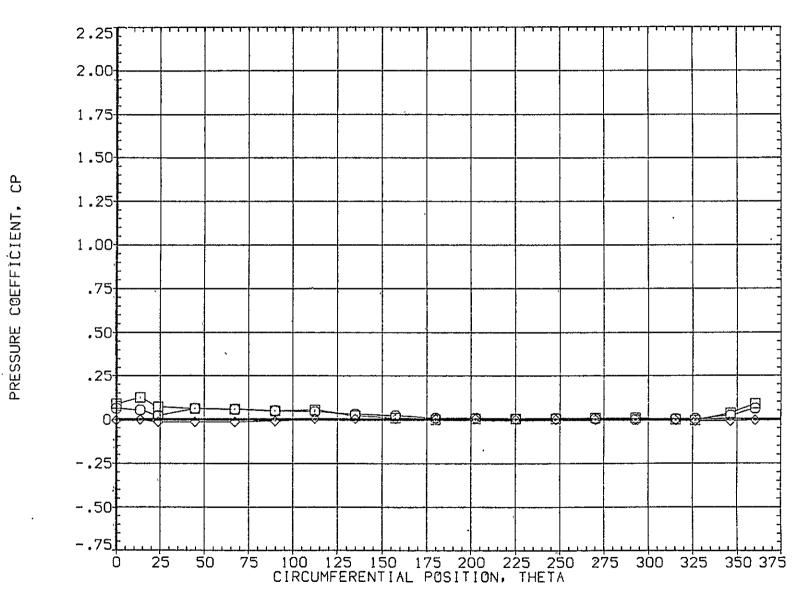


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1764

MSEC	596	(TA-2E)	MCDUSUU	EXTERNAL.	TANK	T 1
ココンドレー	JJO	ししひことによ	TICKUZUU		1. A IVA .	1 1

(P1A012)

YMBOL	X/LB .055 .106	5 -4 8	_РНА 1.290	MACH 4.960								BETA		PARAMETR .000 1.000	OFFSET	s .0 90.0
	2.25			11111			 	 	 	 	 		, , , , ,	71111		
	2.00	<u></u>				 										
	1.75	<u>-</u>														
	1.50-	-			<u></u>											
	1.25															
	1.00-	-														
	.75	- -														
	.50 .)	-0		0		0_		0	-	D			0-		-0
	.25				<u> </u>	-0-	-0-	-0		<u> </u>	 }					·
	0-	<u></u>				\	 	~	-	>				<u> </u>	>	→]
	25	•												 -		
	50	• • •			<u></u>											
	75 0	- - -) ?	 	50 7		 	 	50 1	75 2	JU 2	25 25 THET/	50 2	75 3	00 3	25 25	

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1765

SYMBOL

X/LB " ALPHA'

МАСН

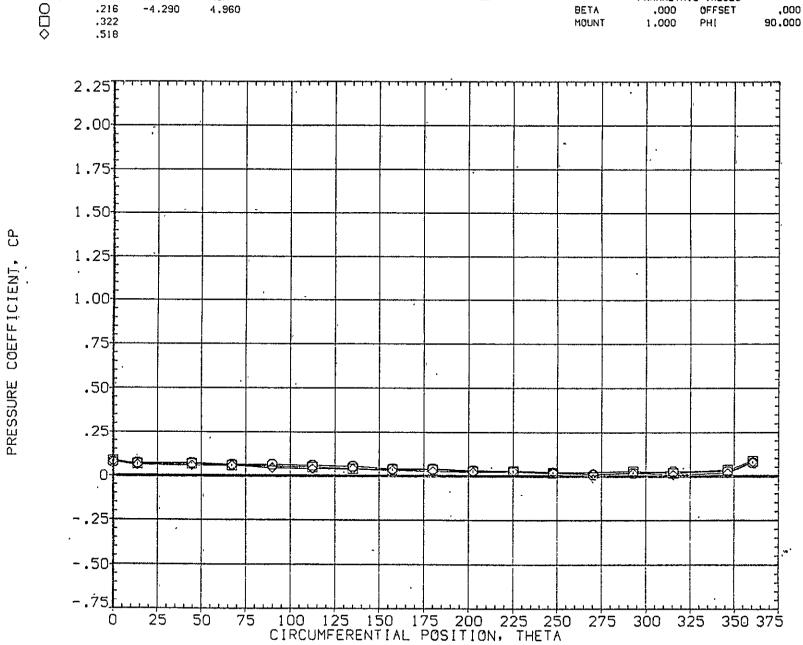


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1766

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1

SYMBOL

X/LB

ALPHA

MACH

(P1A012)

PARAMETRIC VALUES.

000 .610 -4.290 4.960 BETA .000 OFFSET .000 .735 MOUNT 1.000 PHI 90.000 .860 ·2.25 2.00-1.75 1.50- Ω 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50-.25--.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50 *7*5

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1767

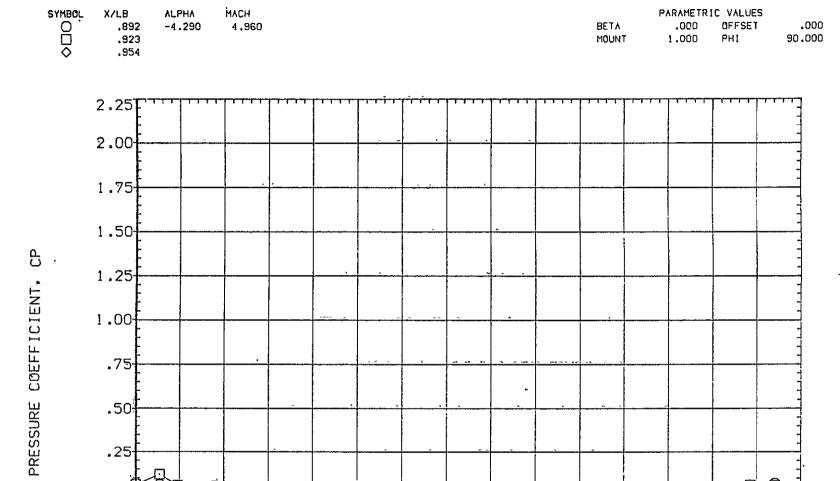


FIG. 5 CIRCÚMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1768

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.25

-.50

-.75

50

MSEC	596	(TA-2F)	MCRASOO	EXTERNAL	T'A NIK	T 1
HIGH	סכט	ししひことにし	コルスロスロロー	EATERNAL.	I AIVIN I	1 (

SYMBOL

X/LB

ALPHA

MACH

٢	D	1	A	\cap	1	2	٦
١.	[-	7	77	U	1	J	,

	.055	3	.280	4.960								BET/ MÓUN		.000 1.000	OFFSET PHI	•
>	.162	•														
	2.25		 	 	- 1 - 1 - 1 - 1	1111	 	 			, , , , , ,	1111		, , , , , , , , , , , , , , , , , , , 	1	1-1-1-
	2.00	• • • • • • • • • •														
	1.75	•														
	1.50	•														
	1.25	• • •														
	1.00	· · ·														
	.75															<u></u>
	.50	: 	-0	<u> </u>			0		0		—			-0-		- 0
	.25						-0	<u> </u>		ļ	<u> </u>					<u> </u>
	, 0	<u></u>		- ->-	<u></u>	 	-	├	→			→	 	+->-		◇
	25 -				· · · · · · · · · · · · · · · · · · ·											
	50							ļ,						-		
	75 0	<u> </u>	5 5	0 7	#-1.#-E	00 12	25 1	50 1	75 2	200 2	25 2		75 3	300 3:	25 350	

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1769

SYMBOL	X/LB	ለቤዮዘለ	MACH	PARAI	ETR!	C VALUES	
Q	.216	~.280	4.960	BETA .O	00	OFFSET	.000
	.322			O.! TAUDM	סכ	PHI	90.000
\Diamond	.518						

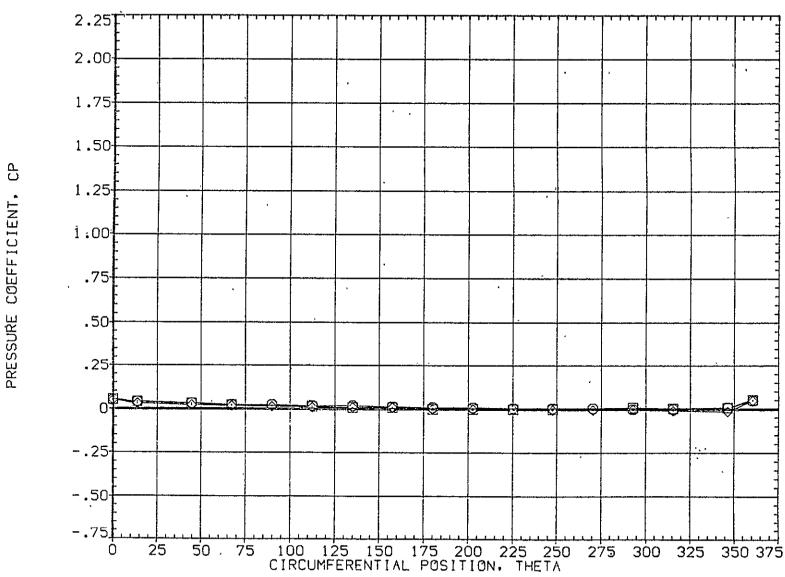


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1770

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1771

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

-.75



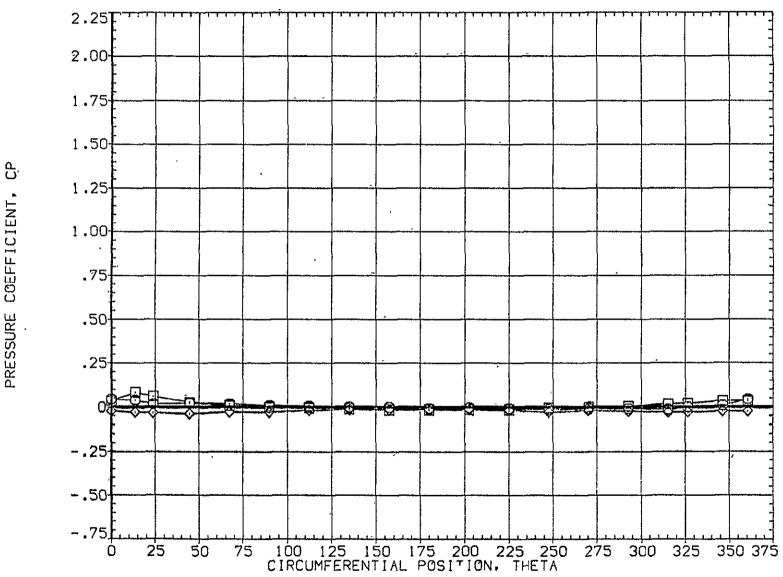


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

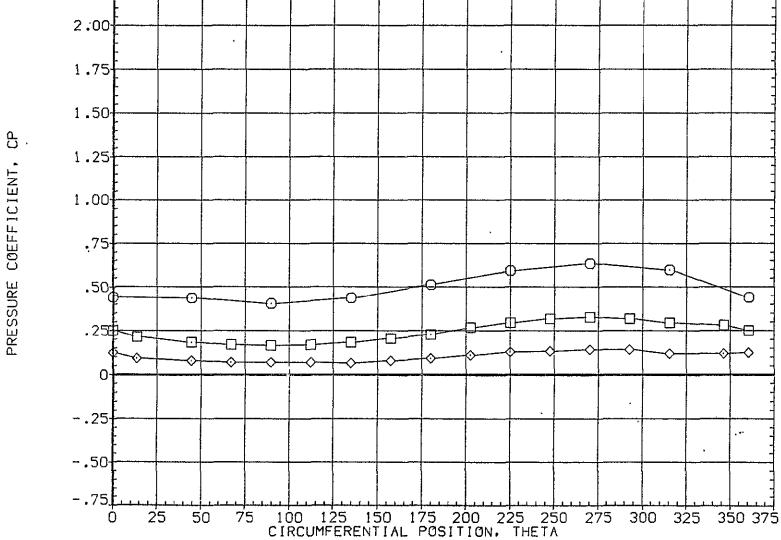


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1773

1.00

.75

.50-

.25

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-.75

25

50

75

PRESSURE

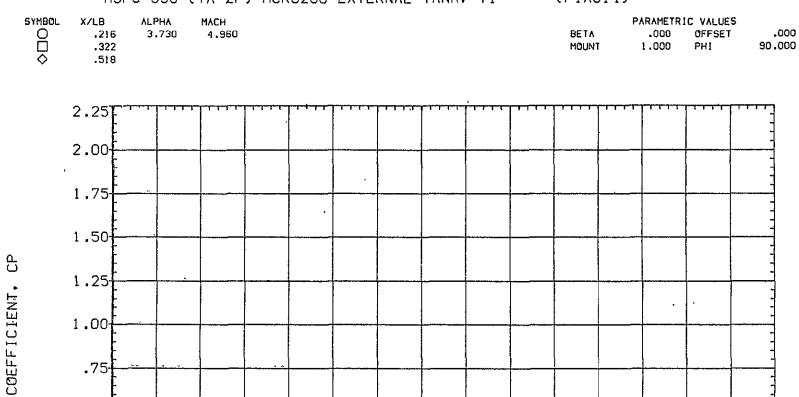


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1774

CIRCUMFERENTIAL POSITION. THETA

100 125 150 175 200 225 250 275 300 325 350 375

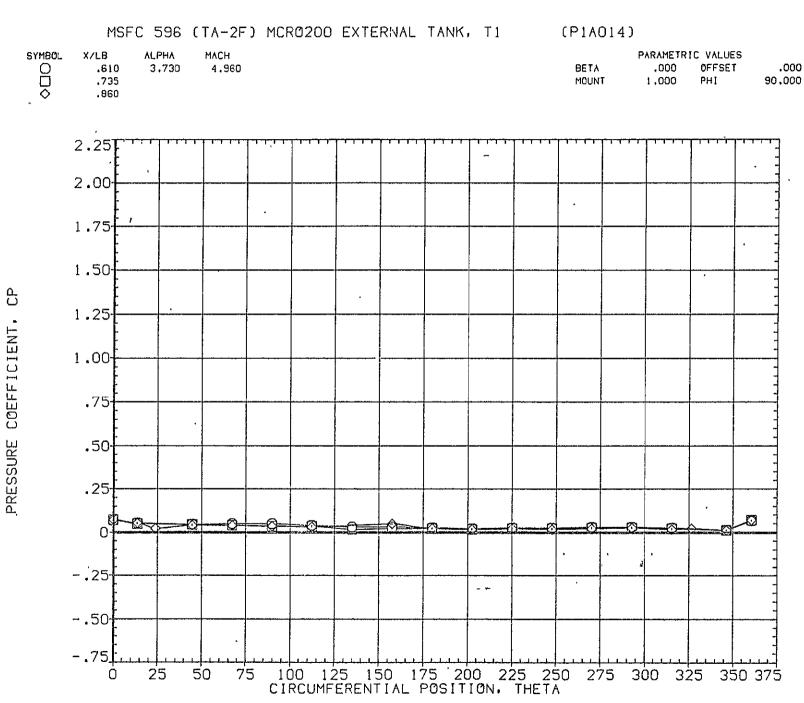


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES



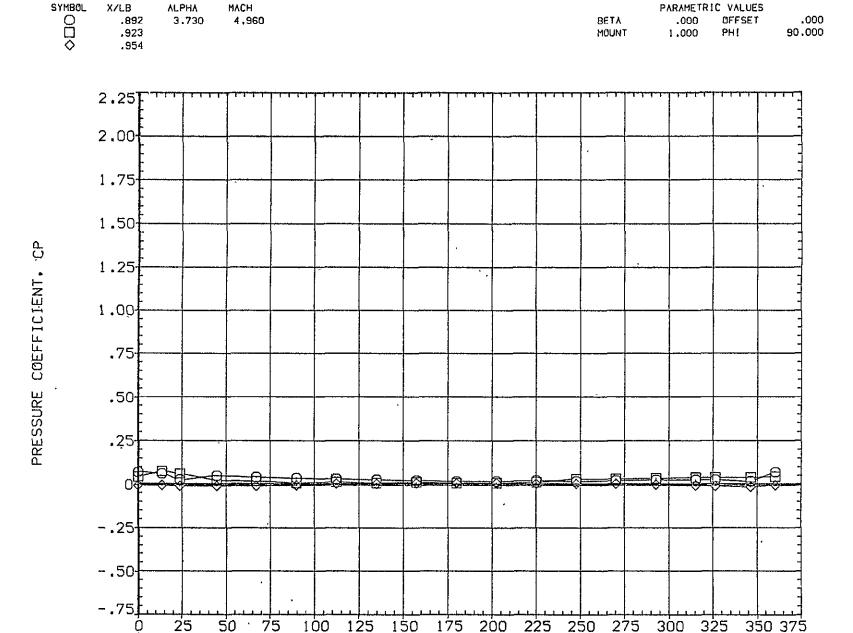


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1776

CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION-OVER ET - T1 WITH PROTUBERANCES
PAGE 1777

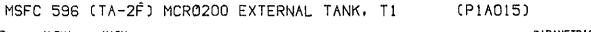
100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION: THETA

-.50

-.75

25

75





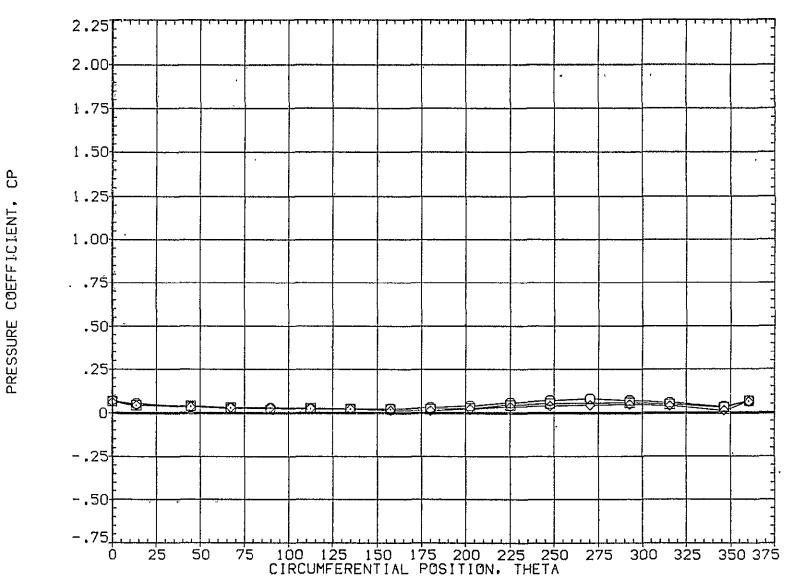


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1778

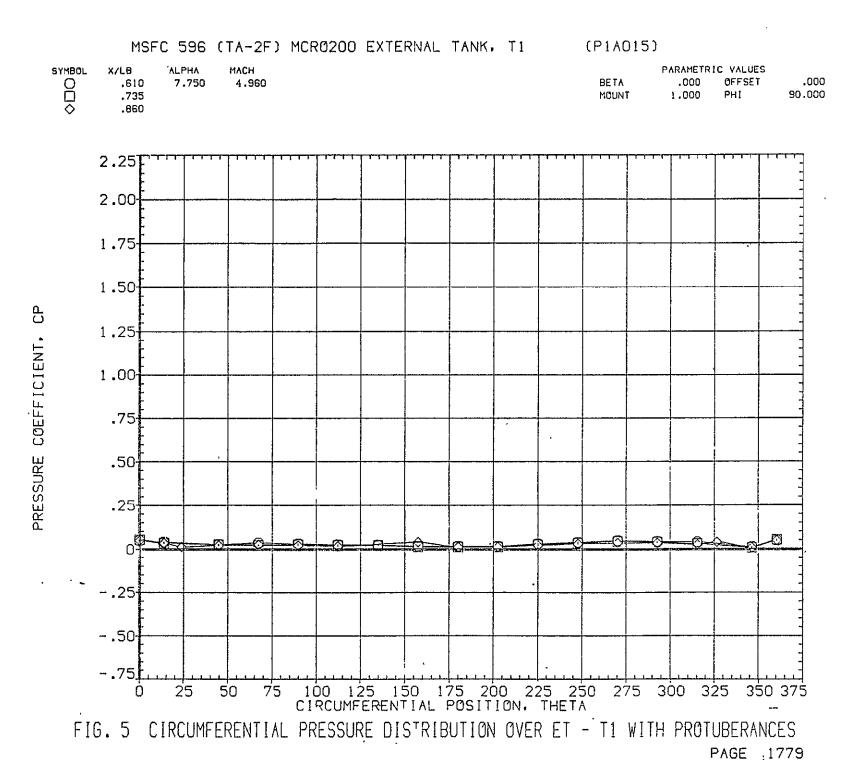
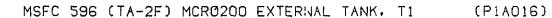


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1780

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375



	SYMBOL	X/LB .055	ΛLΡΗΛ 12.450	MACH 4.960								ВЕТА	ŧ	ARAMETR:	C VALUE OFFSET	s 20.000
	000	.108 .162										MOUNT	Γ	1.000	PHI	90.000
		2.25	,	777777	-1-1-1	- 	1		 	 					1 1 1	
		2.00												 -		
		1.75														-
_		1.50														
T. CP		1.25				<u> </u>								<u> </u>		
COEFFICIENT.		1.00			 								·-···			
OEFF		.75												0		
		.50					<u> </u>		0				 []	7		
PRESSURE		.25	70	0	-0-		0						 \$			[Q
Ω		0	♦	8 -0-	<u>-</u> <u>-</u> <u>-</u> <u>-</u>		-0-	→	\ \ \ \						>	→ <u>]</u>
		25 -														
		50											······································			
		75 <u>F</u>		50 7			 	50 1	75 2	70 2	25 25	50 27	75 C	00 32	25 25	50 375
		J	2.0	55 /	C 1	ÖO 1: RCUMF	EREN	TIAL	PÖSIT	ION,	THETA	\	J J			,5 5,5

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





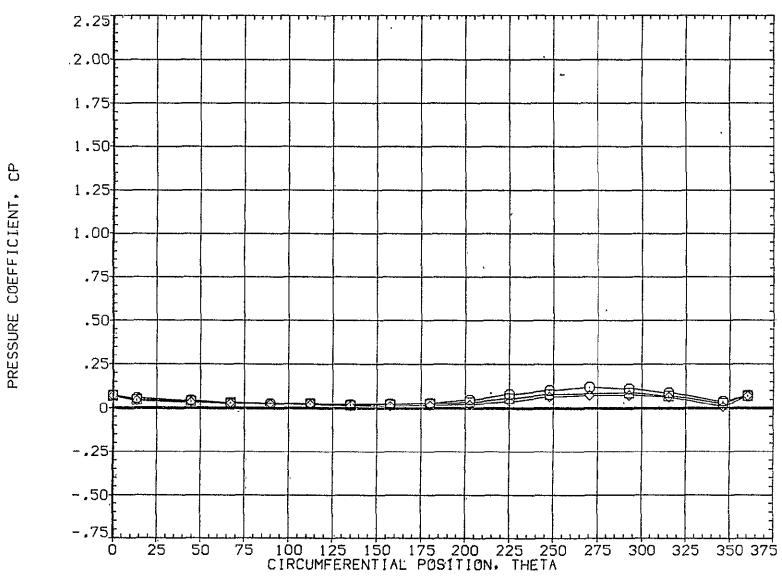


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1782

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A016) SYMBOL O O ALPHA 12.450 X/LB MACH PARAMETRIC VALUES .610 4,960 BETA OFFSET 20.000 .735 90.000 MOUNT 1.000 PH! .860 2.00 1.75 1.50 9 1.25 PRESSURE COEFFICIENT, 1.00 .75 .50 .25 -.25 -.50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.75±

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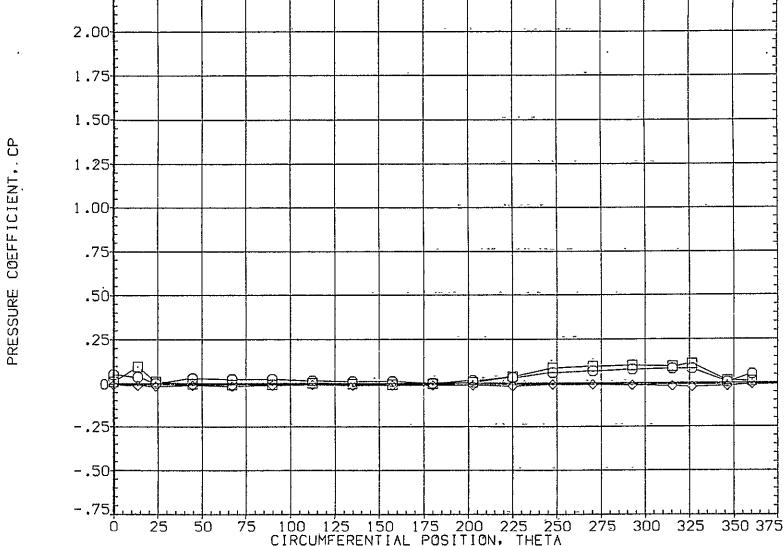


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1784

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1785

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

-.75

50

75

SYMBOL	X/LB	· ALPHA	MACH	PARAMETR	IC VALUES	
Q	.216	16.470	4.960	OOO. ATBE	OFFSET	20.000
Ď	.322			000, 1 TNUOM	PHI	90.000
\Diamond	.518					

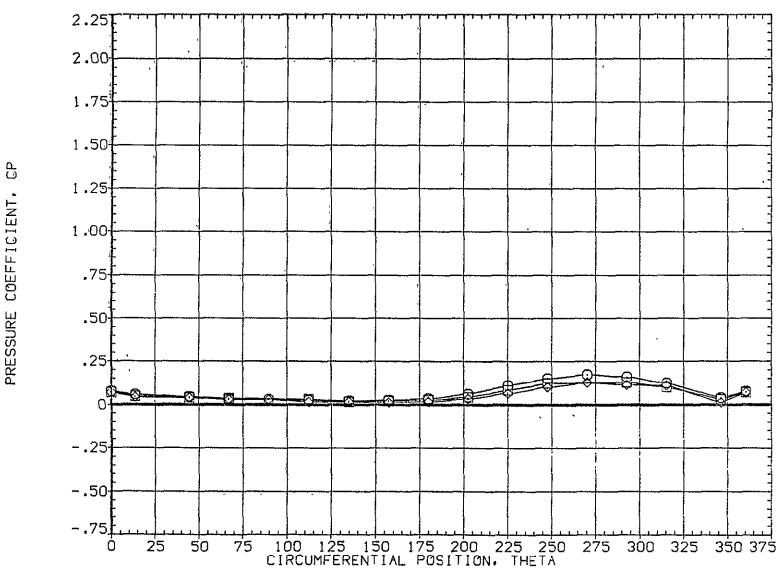


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A017) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 16.470 .610 4.960 BETA .000 OFFSET 20,000 .735 MOUNT 1.000 PHI 90.000 .860 2.25 2.00 1.75 1.50 С 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50-**-.75** 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1787

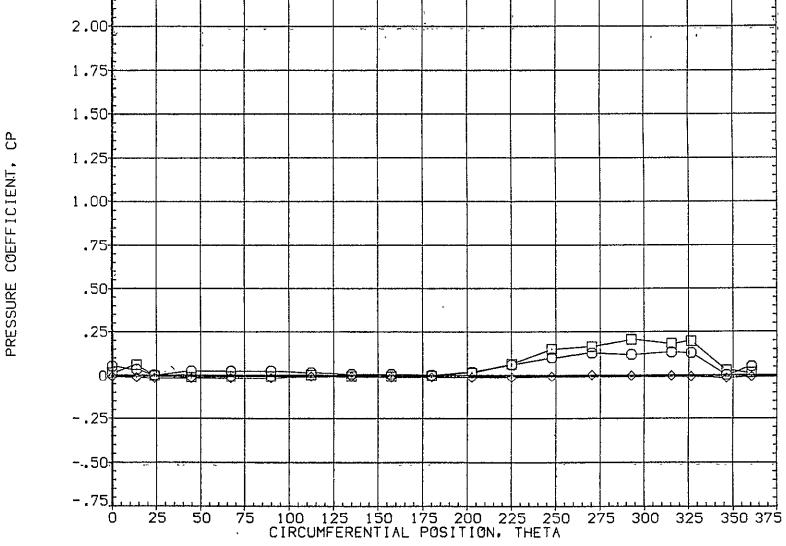


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1788

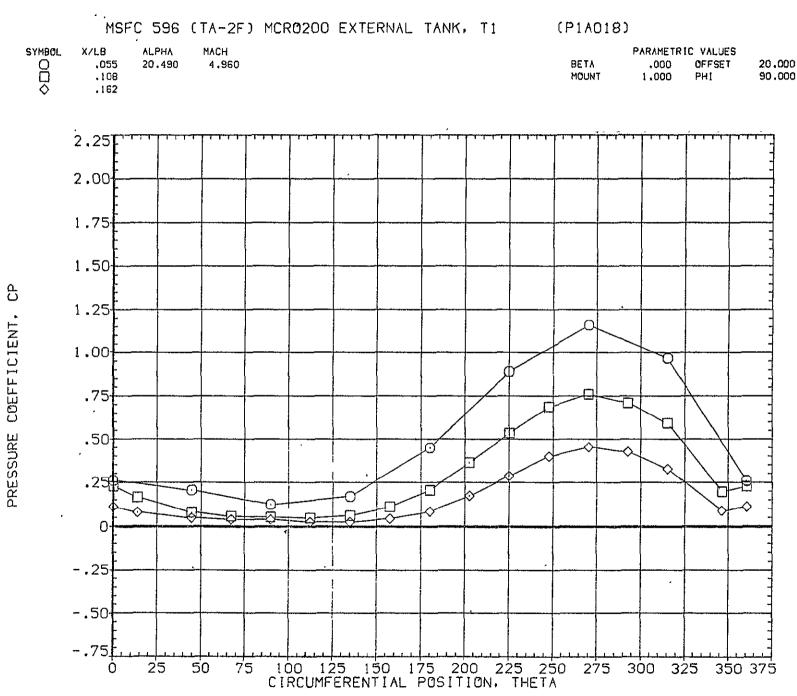


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1789

SYMBOL

X/LB

ALPHA

MACH

(P1A018)

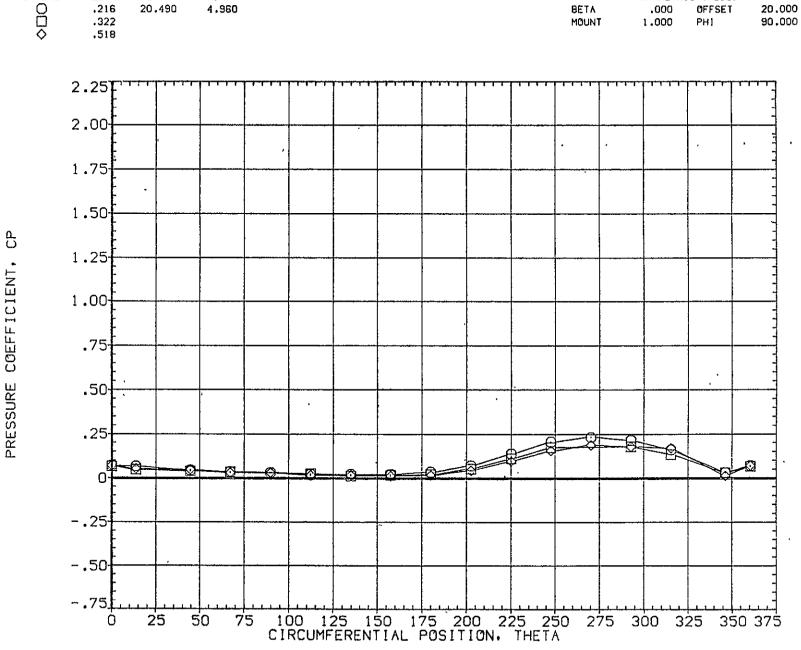


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1790

MSEC 598	(エリーンピリ	MCBUSUU	EVTERMAL	TANK	T 1

(P1A018)

SYMBOL	X/LB	ALPHA	MACH	PARAMET	RIC VALUES	
0	.610	20.490	4.960	BETA .000	OFFSET	20.000
	.735			000,1 TAUOM	I H S	90.000
\wedge	.860					

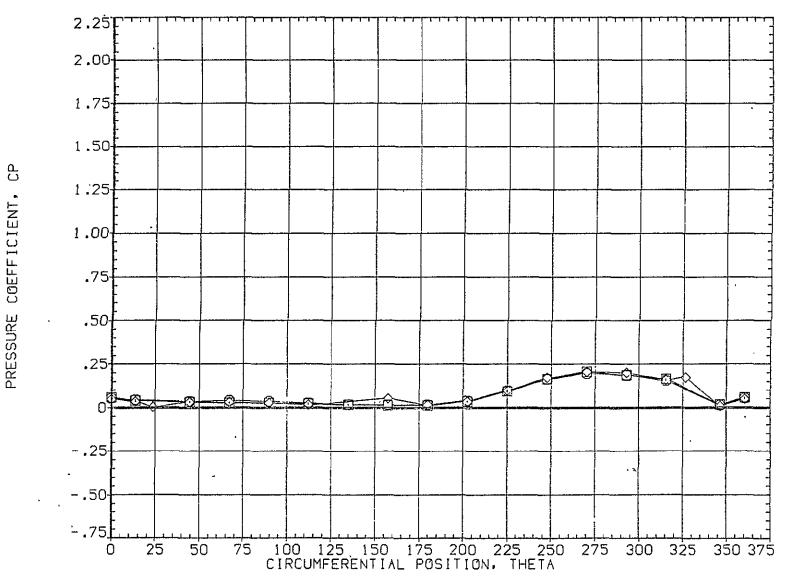


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

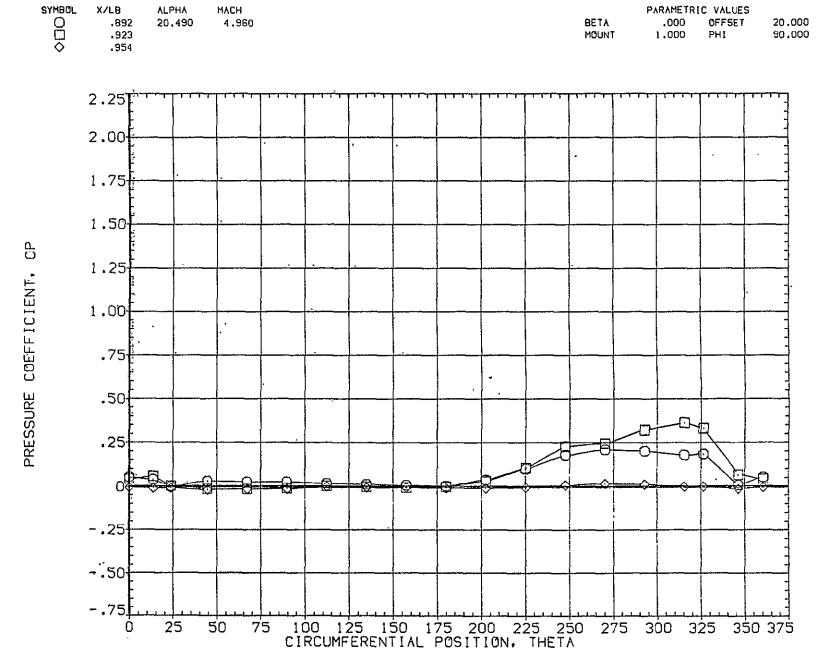


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1792

MSEC	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T 1	(P1A019)
		4 1 M & 1 J	11010200	Pr V 1 Pr 1 / 1 / 1 / 1 / 1 / 1	1711117	1 4	(11/0101

SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC VALUES	
0	.055	24.510	4.960	BETA .000 OFFSET	20.000
ŏ	.108			MOUNT 1.000 PHI	90.000
\Diamond	.162				

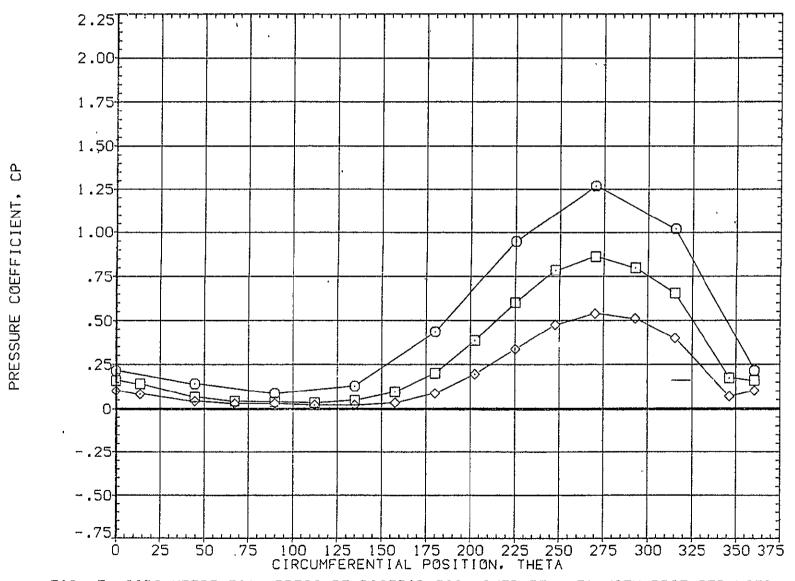
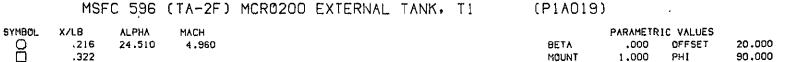


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI-WITH PROTUBERANCES



000

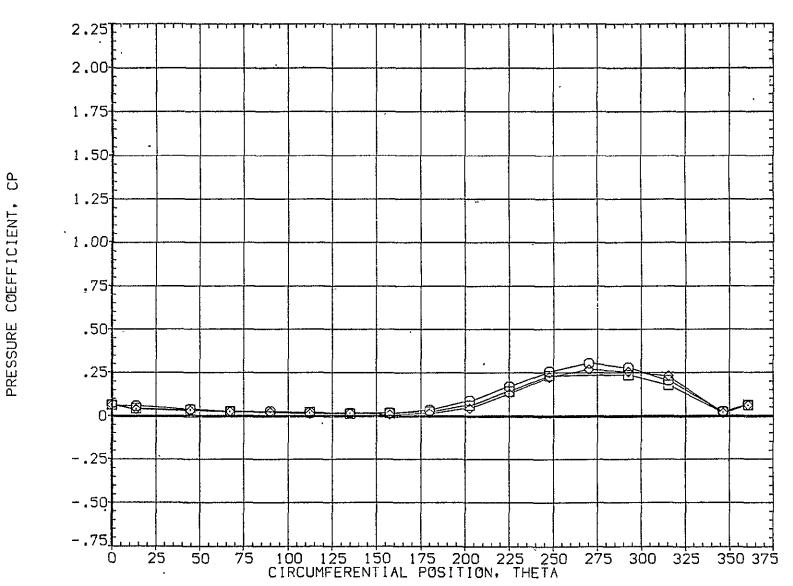


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1794

MSFC 596 (TA-2F) MCRØ200 EXTERNAL TANK, T1 (P1A019) PARAMETRIC VALUES X/LB **ALPHA** MACH SYMBOL 20,000 000 24.510 4.960 BETA .000 OFFSET .610 MOUNT 1,000 PHI 90.000 .735 .860 2.25 2.00 1.75 1.50 1.25 COEFFICIENT, 1.00 .75 ..50 .25 -.25 - .50 -.75100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1795

CP

PRESSURE



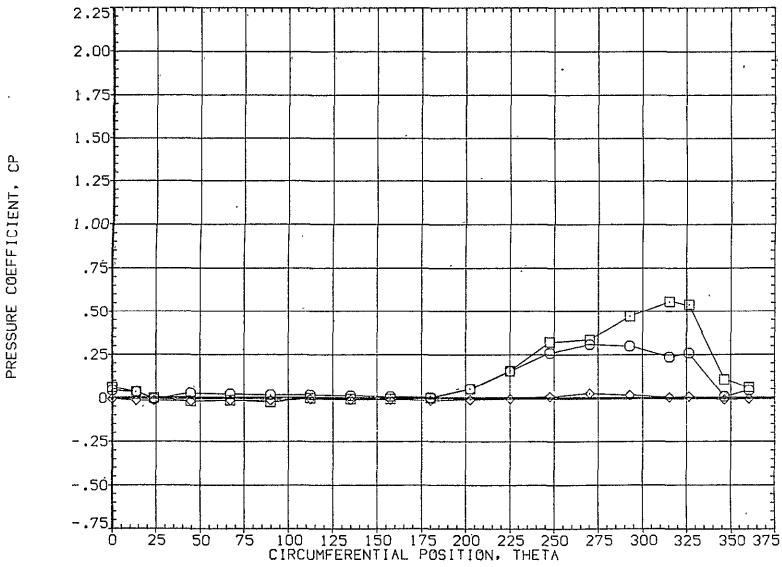


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1796



PARAMETRIC VALUES SYMBOL X/LB **ALPHA** MACH 000 28.540 4.960 BETA .000 OFFSET 20.000 .055 MOUNT 1.000 PHI 90.000 .108 .162

(P1A020)

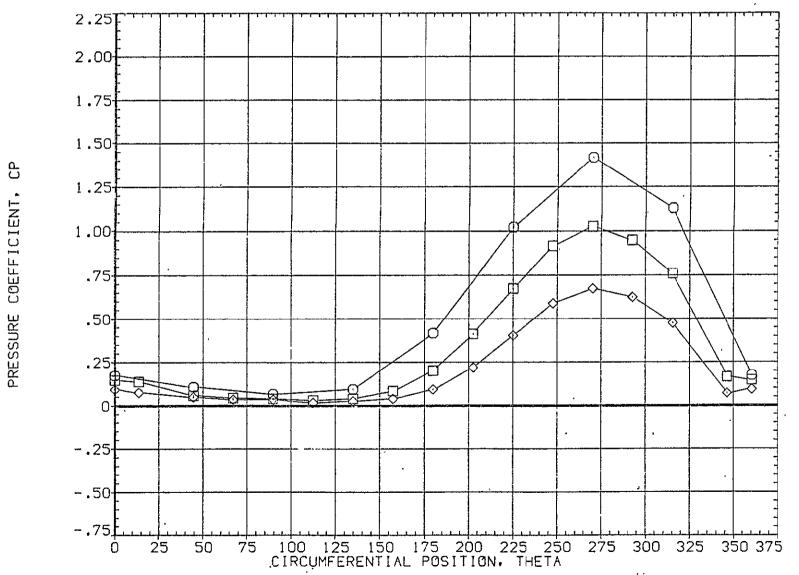


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1797



 _		_	_	_	_
 PΙ	ıΛ	m		О.	٦
 _	ת ו		_	43	- 1

SYMBOL	X/LB	ALPHA	MACH			PARAMETR	IC VALUES	
00	.216 .322 .518	28.540	4.960		BETA MOUNT	.000 1.000	ÖFFSET PHI	20.000 90.000
~	.310							

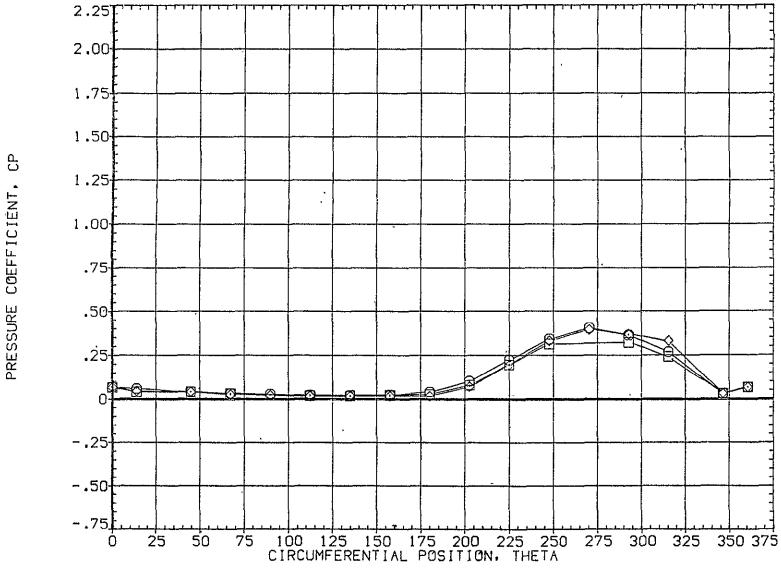


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1798

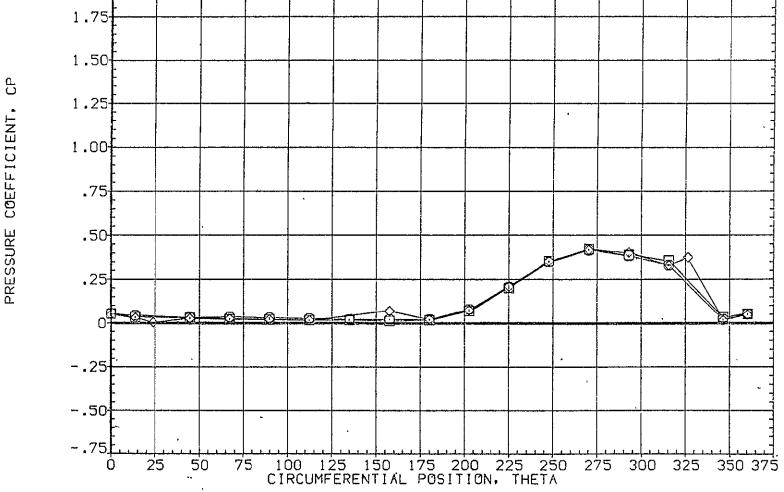


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1799

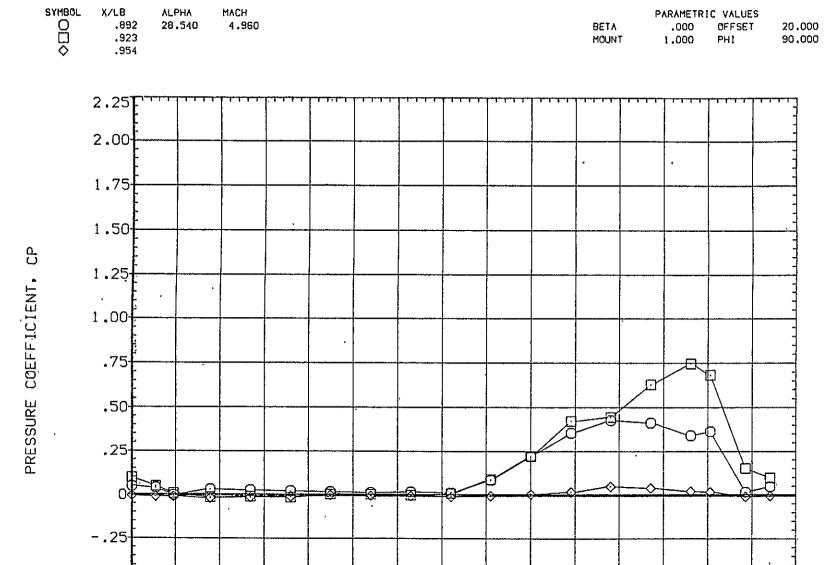


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1800

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.50

~ .75

50

	MSFC	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T1	(P1A021)		
X/L	.8	ALPHA	MACH						PARAMETR:	C VALUES	
	055	-8.310	4.960					BETA	.000	OFFSET	.000
	108							MOUNT	1.000	1H3	135.000

SYMBOL O O O

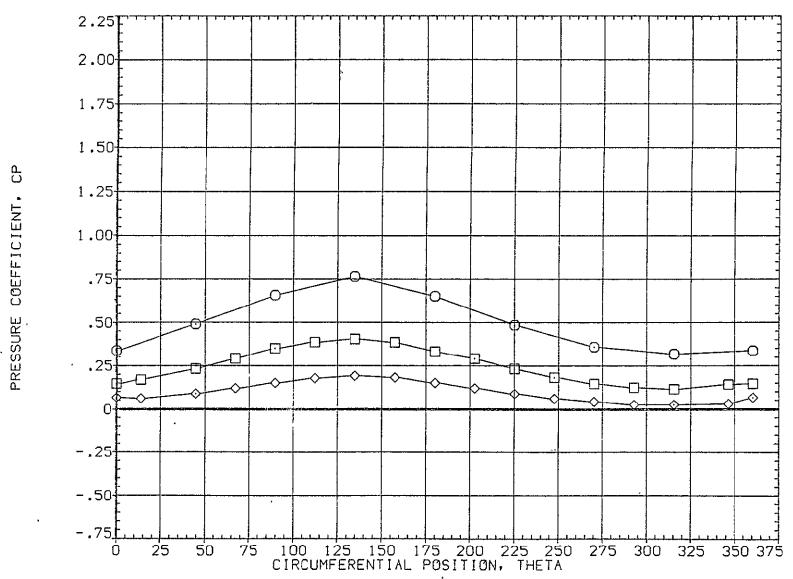


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1801



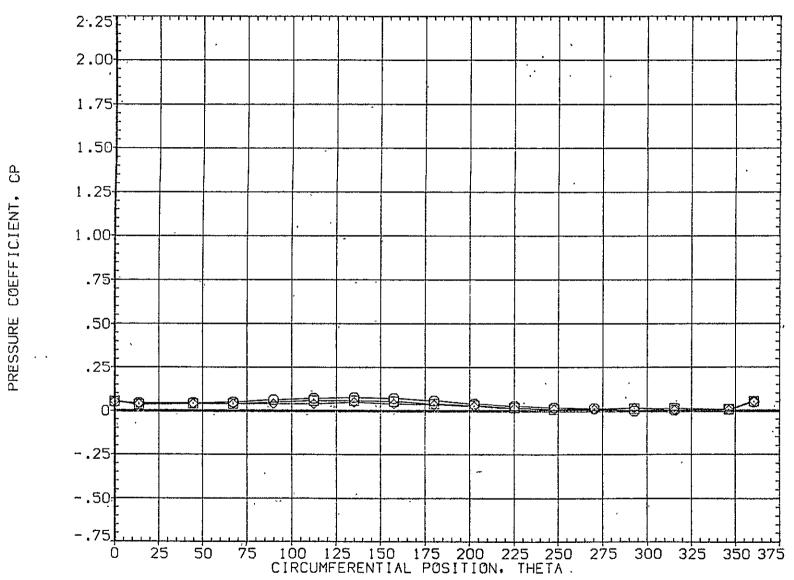


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES:
PAGE 1802

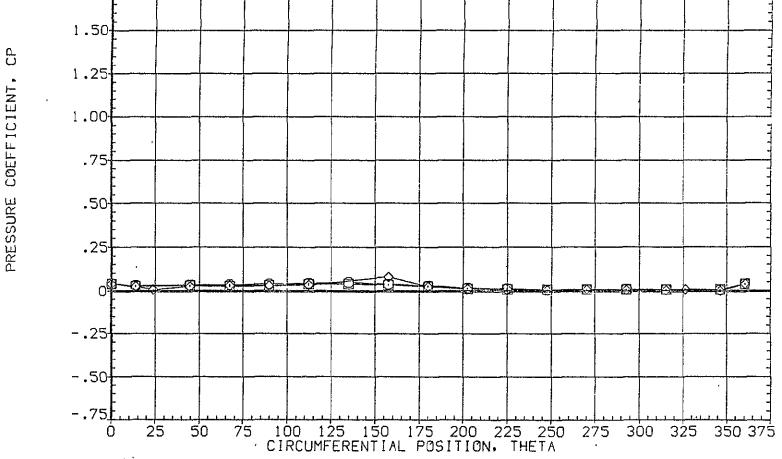
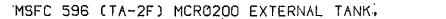


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1803



ALPHA

MACH

(P1A021)

PARAMETRIC VALUES

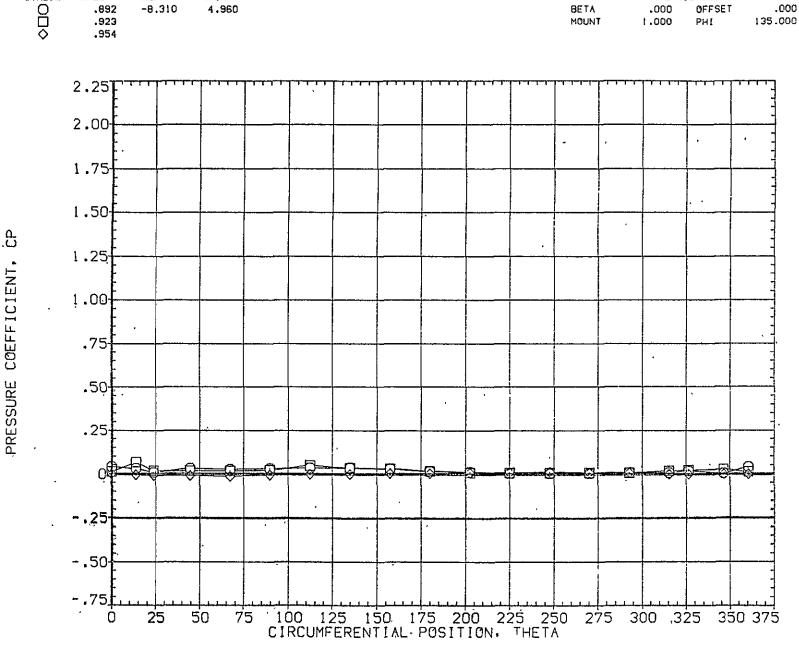


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1804

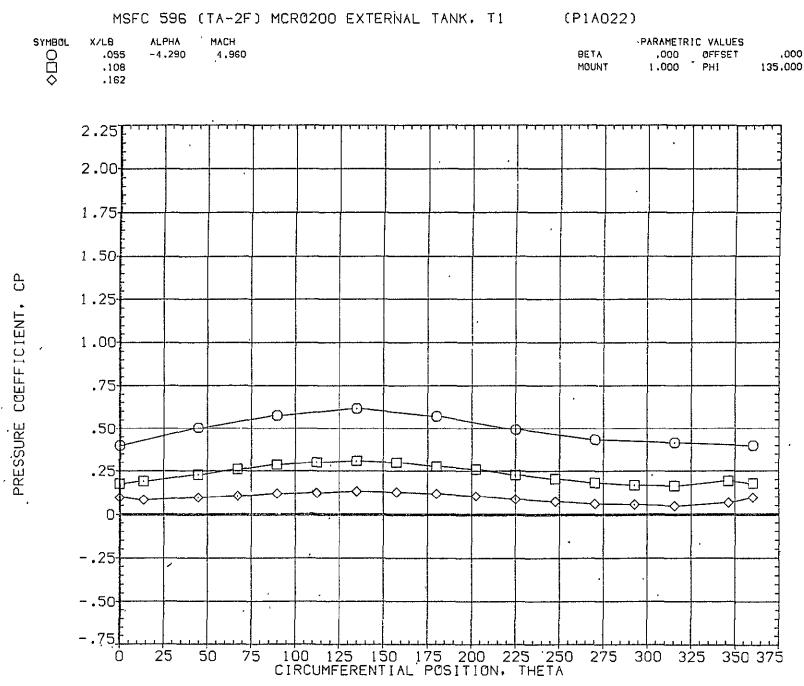
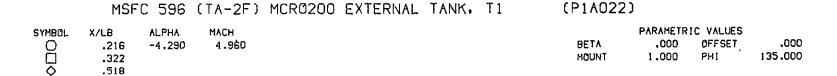


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1805



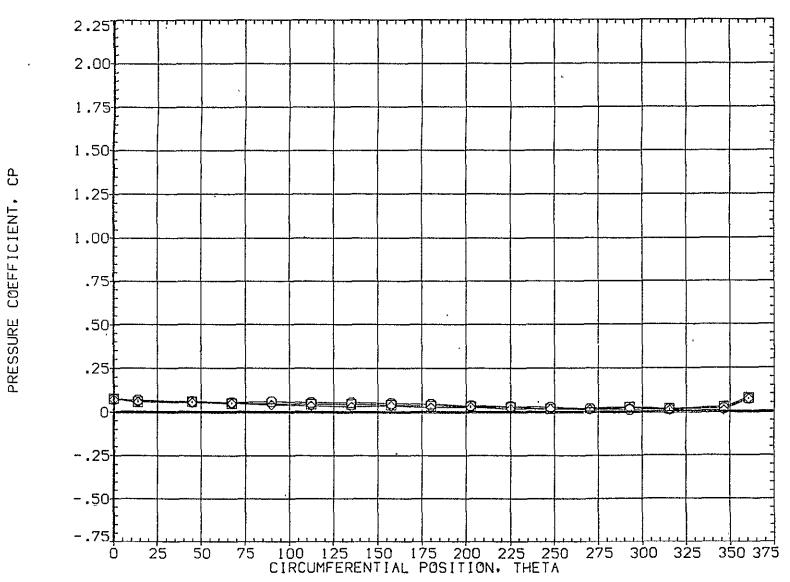


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1806

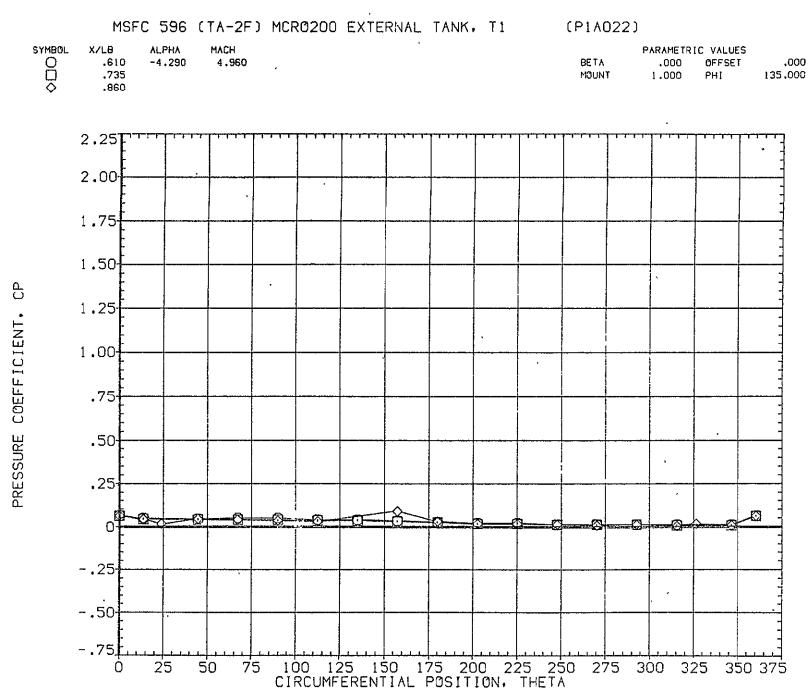


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1807



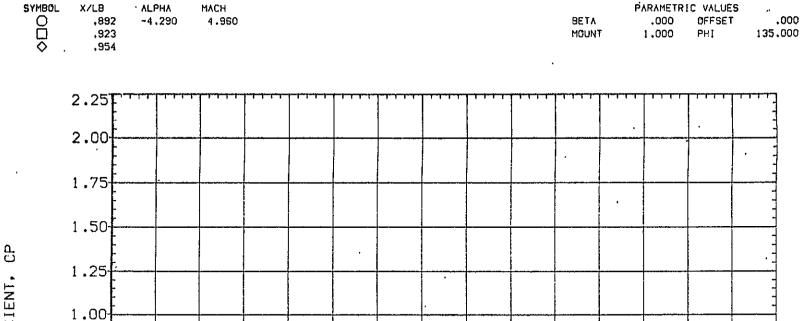


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1808

CIRCUMFERENTIAL POSITION, THETA

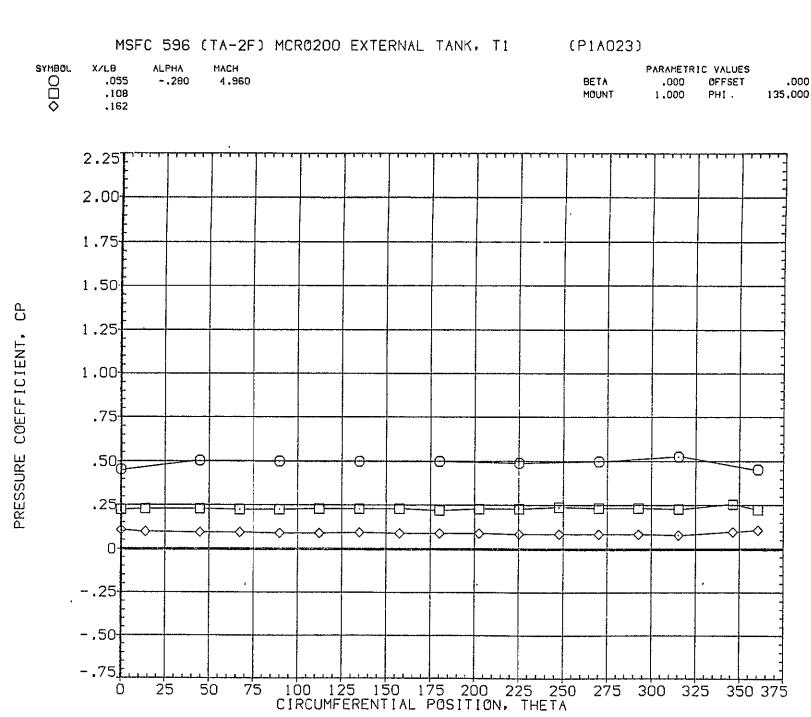


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1809

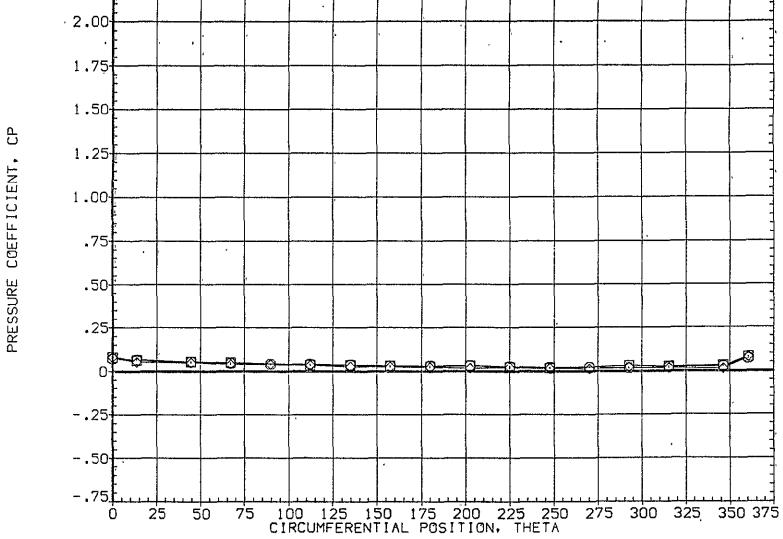


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1810



SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 -.280 4.960 .610 BETA .000 OFFSET .000 .735 MOUNT 1.000 PHI 135.000 .860

(P1A023)

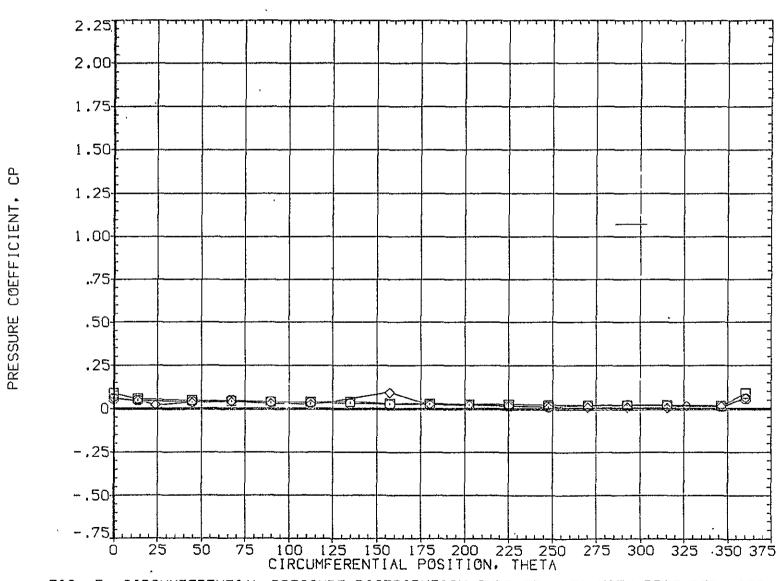


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUES

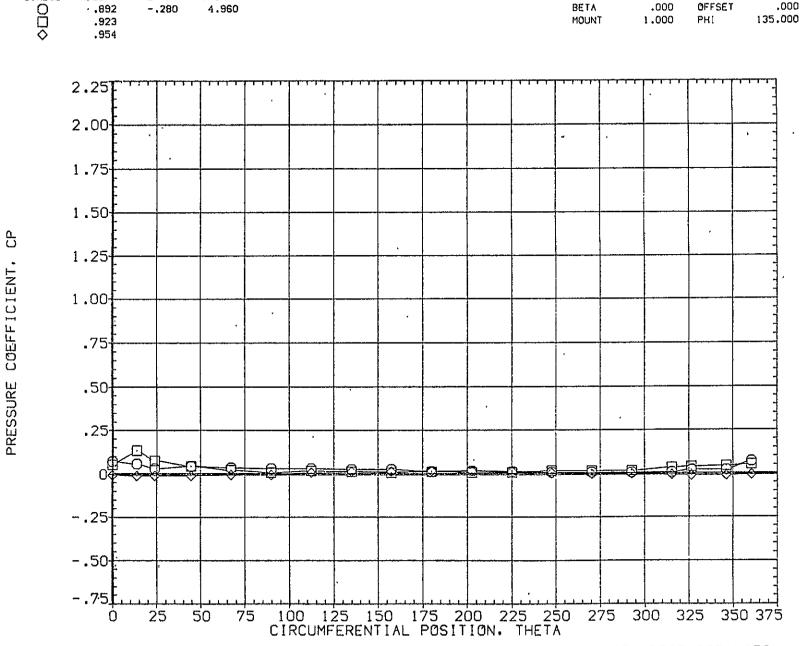


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1812

MSFC	596	(TA-2F)	MCRASON	FXTERNAL	TANK.	T 1

(P1A024)

SYMBOL O O	. X/LB .05: .10: .16:	8	MACH 0 4.960								BETA MOUN		ARAMETR 2000 1.000	IC VALUES OFFSET PHI	,000 135,000
,	2.25		 	, , , , ,	1	, , , , , ,	 			 		7 - 1 - 1	 		
	2,00				,							<u> </u>			
	1.75								 			 			
	1.50	- -										-			
 G	1.25	-							<u> </u>						-
COEFFICIENT,	1.00-	- -		_					 	<u> </u>	İ				
0EFF1	.75														
	.50		_	-0-							0		0		-
PRESSURE	.25					-0-						<u>-</u>			
ு	O-	>	\	\rightarrow	\ \ \	♦	\$	♦	>		>	-	→		
	25	-					,								
	50	-									1				
	75 0	25	50 7	5 1:	00 1: RCUMF	25 15	50 1	75 20	00 2:	25 2 5	50 27	75 30	00 32	25 35	375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





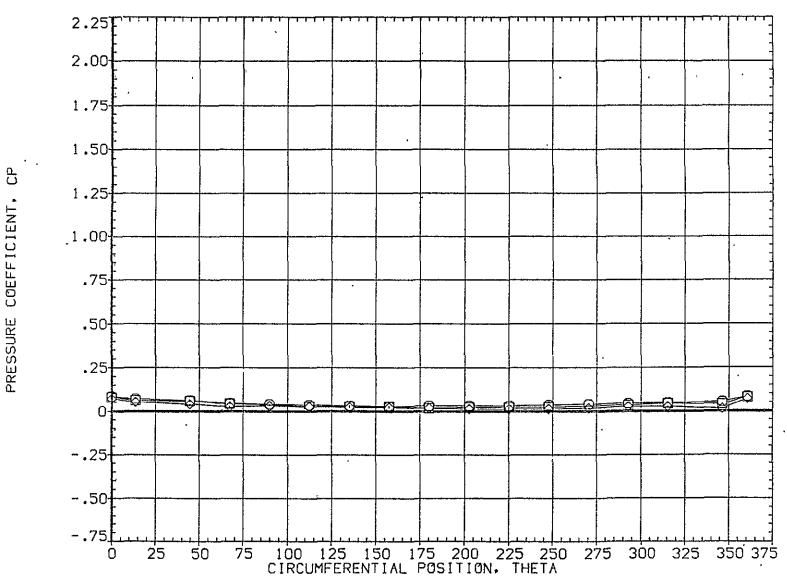


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1814

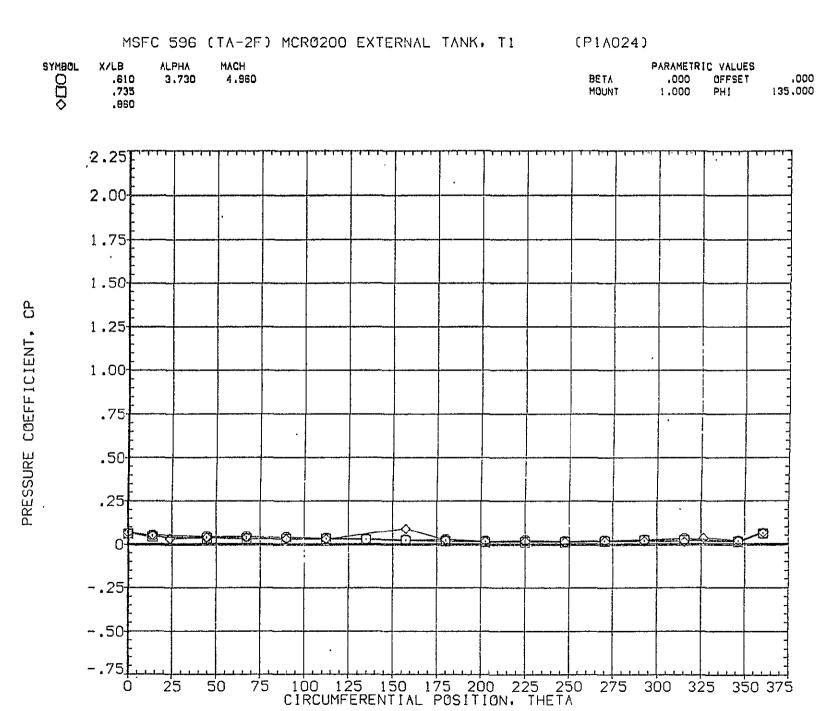


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1815

SYMBOL

X/LB

ALPHA

МАСН

٢	D	1	٨	n	2	1	3
·	Γ.	1	Λ	u	Z	4	ز

PARAMETRIC VALUES

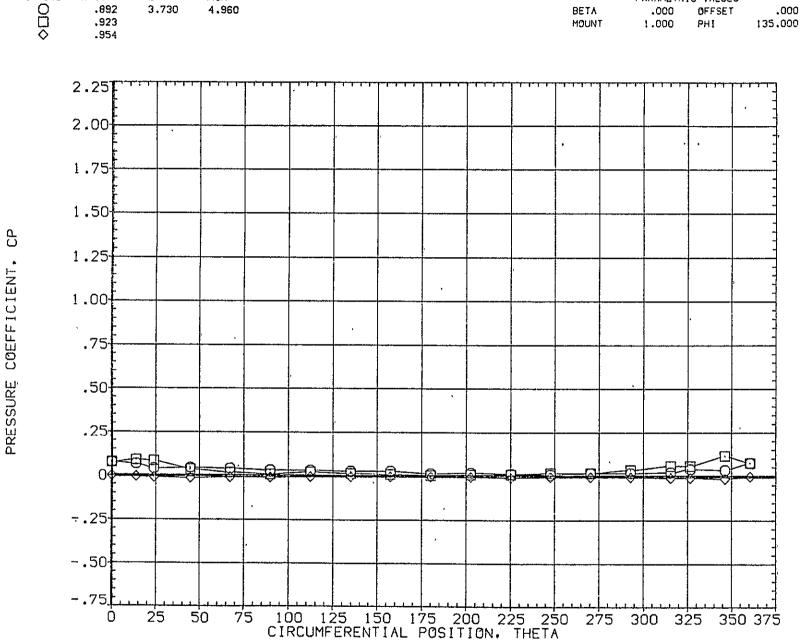


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1816.

	MSF	C 596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T1.	(P1A025))		
SYMBOL	X/LB	ALPHA	MACH						PARAMETRI	C VALUES	
0	.055	7.750	4.960					BETA	.000	OFFSET	.000
	.108							MOUNT	1.000	PHI	135.000
$\overline{\Delta}$.162										

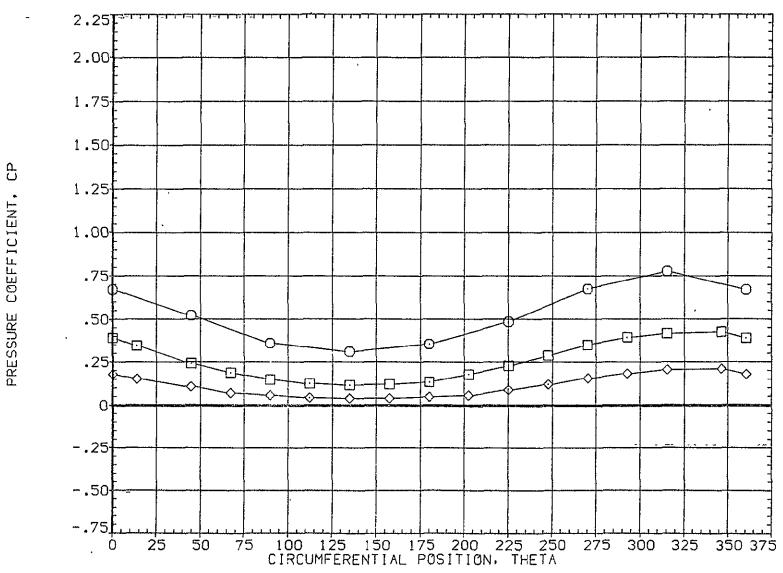


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1817

SYMBOL X/LB

ALPHA

MACH

PARAMETRIC VALUES

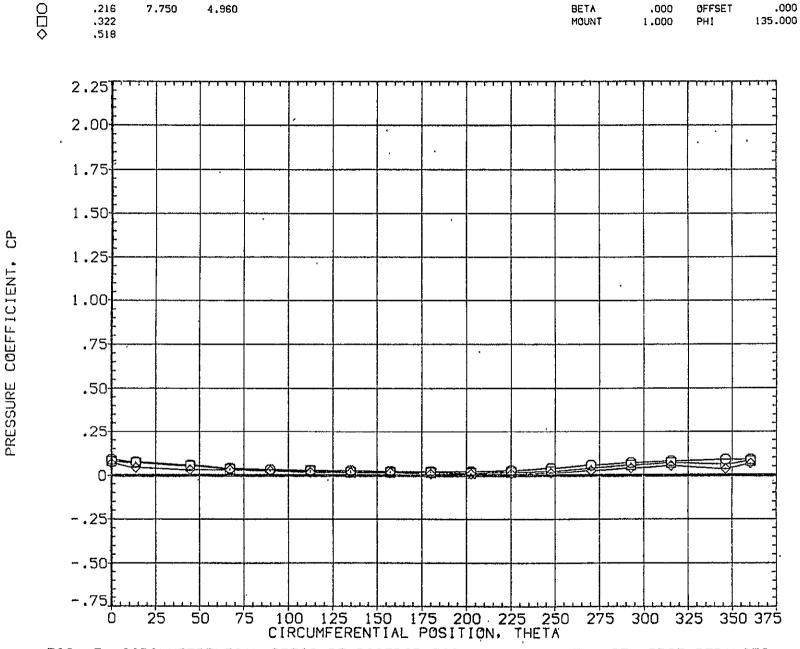


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1818

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A025) X/LB ΛLPHλ SYMBOL MACH PARAMETRIC VALUES . 0□◊ 7.750 .610 4.960 BETA OFFSET .000 .000 .735 MOUNT 1.000 135.000 PHI .860 2.25T 2.00 1.75 1.50 $\frac{1}{2}$ 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1819

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1820

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A026) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 .055 12.450 4.960 OFFSET 20,000 BETA .000 MOUNT .108 1.000 PHI 135,000 .162 2.25 2.00 1.75 1.50 $^{\Omega}$ 1.25 COEFFICIENT, 1.00 .75 PRE-SSURE .50 <u>-0</u> 0 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1821

MSEC	596	(TA-2F)	MCRUSOU	EXTERNAL	TANK.	T 1
1101 6	JJ0	L L M Z L J	HUNUZUU		1 / \ 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	, ,

X/LB

ALPHA

MACH

SYMBOL

(P1A026)

PARAMETRIC VALUES

.216 .322	12.450	4.960								BETA MOUN		.000 1.000	OFFSET PH!	20.00 135.00
,5,5		,												
2.25		11111	,,,,	1111	1111		1 1 1 1	711	 	7 7 7 7	7 1 1	1111		
2.00				,			-							-,
1 . 75	,			1										
***														=
1.50														
1.25														
1.00									1					
.75							,							
.50-		-										-		<u>_</u>
.25						ļ 		2						
		O-		· 			7	×	7		0		9	1
. [
E	,		[
50						 	· 		 			 		
75		<u> </u>	 											<u> </u>
	2.25 2.00 1.75 1.50 1.25 1.00 25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50 25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50 .25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50	2.25 2.00 1.75 1.50 1.00255075	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .255075	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 0	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50 .25 .50 .25

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1822

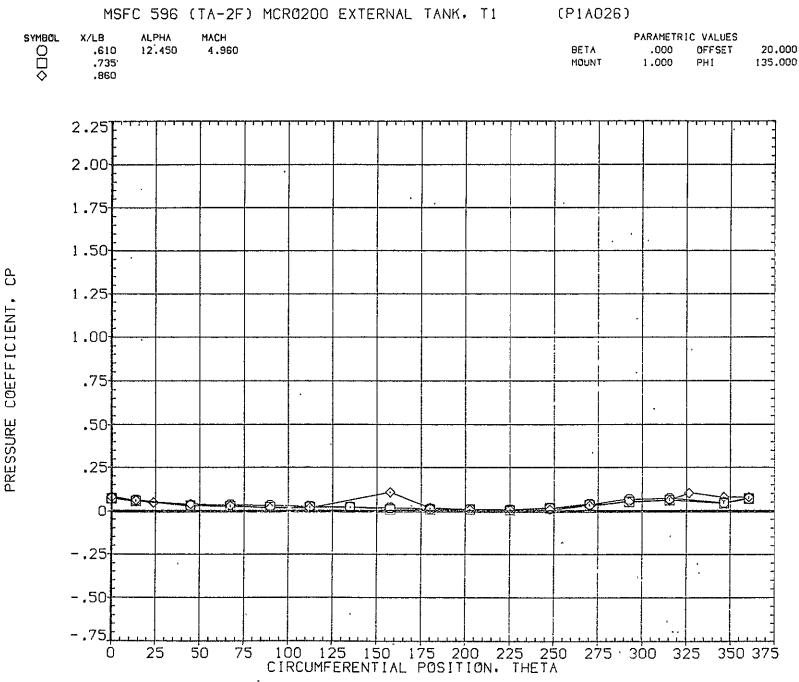


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1823

MSFC :	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T 1	(P1AO26)

SYMBOL	X/LB	ALPHA	MACH	PARAMETE	PARAMETRIC VALUES				
0	.892	12,450	4.960	BETA .000	OFFSET	20.000			
ă	.923			MOUNT 1.000	PHI	135.000			
0	.954								

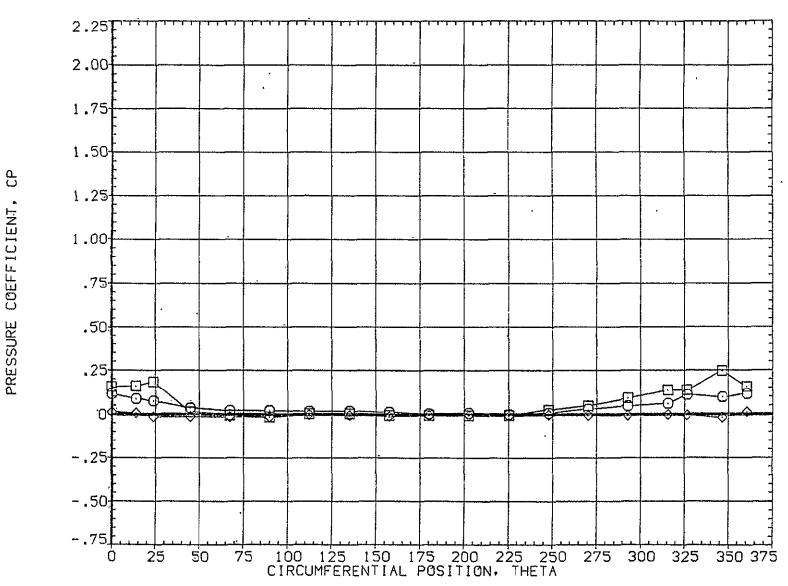


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1824

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1. (P1A027)

SYMBOL	X/LB	ALPHA	MACH	PARAMET	PARAMETRIC VALUES				
0	.055	16.450	4.960	DOO, ATBE	OFFSET	20.000			
	.108			OOO.1 THUOM	PHI	135.000			
\triangle	.162								

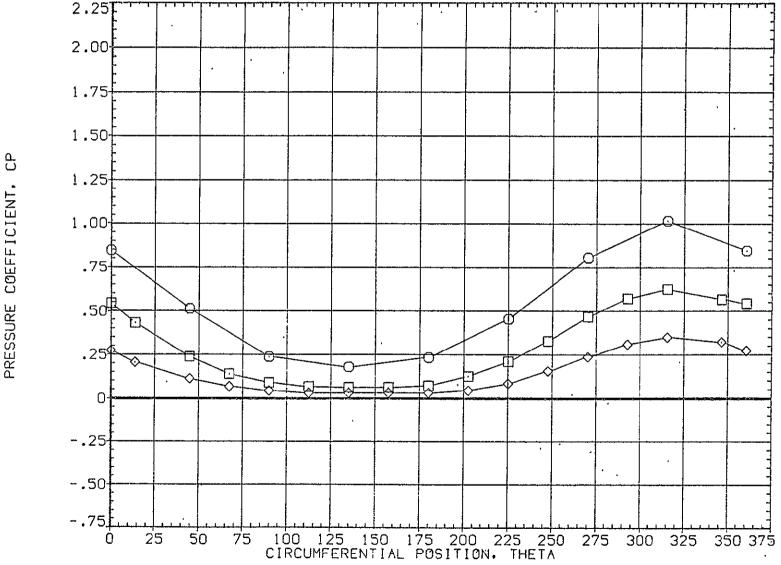


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1825



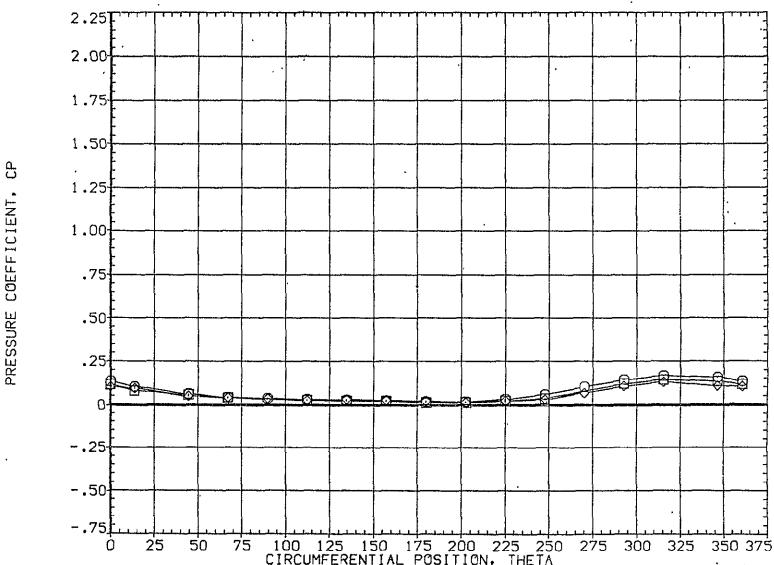


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1826

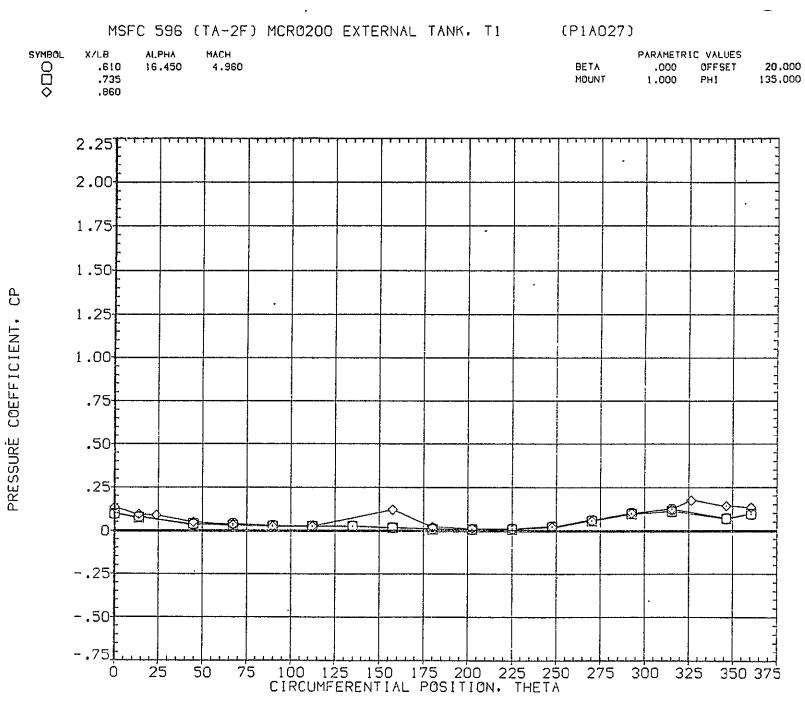


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1827



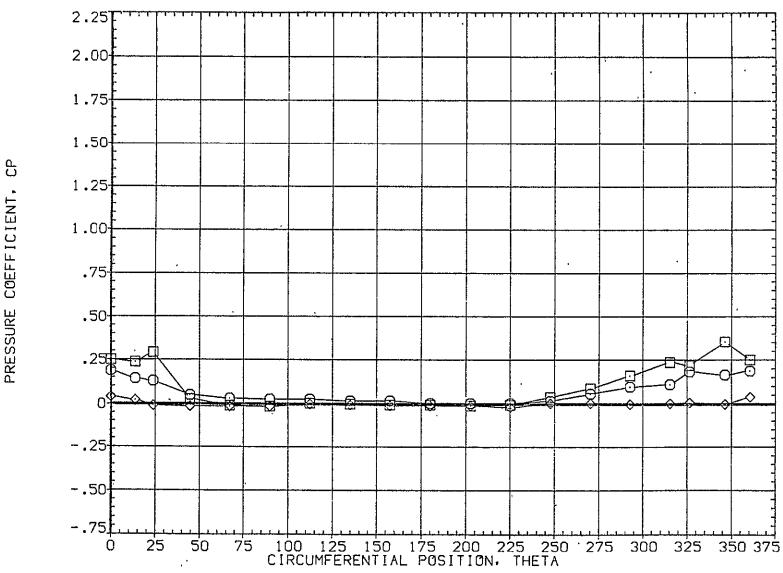


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1828

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A028)	MSFC	596	(TA-2F)	MCR0200	EXTERNAL	TANK.	T1	(P1A028)
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SYMBOL	X/LB	ALPHA	MACH	PARAMETRIC	VALUES	
9	.055	20.490	4.960	BETA .000	OFFSET	20.000
Ď	.108			MOUNT 1.000	PHI	135,000
^	162					

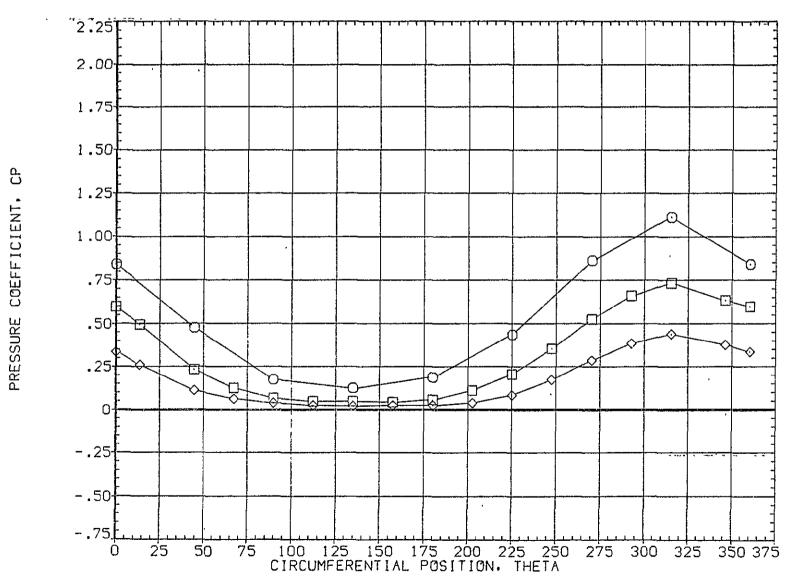


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1829

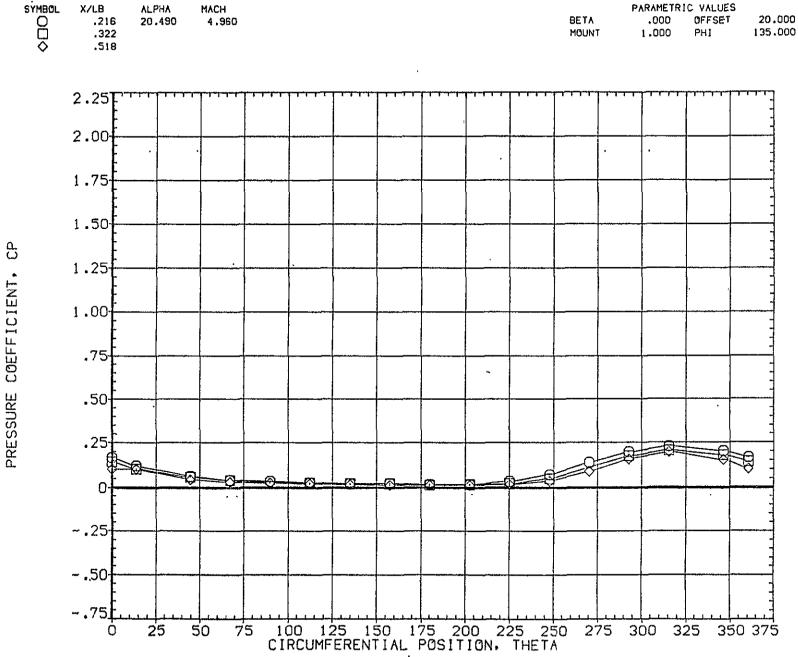


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1830

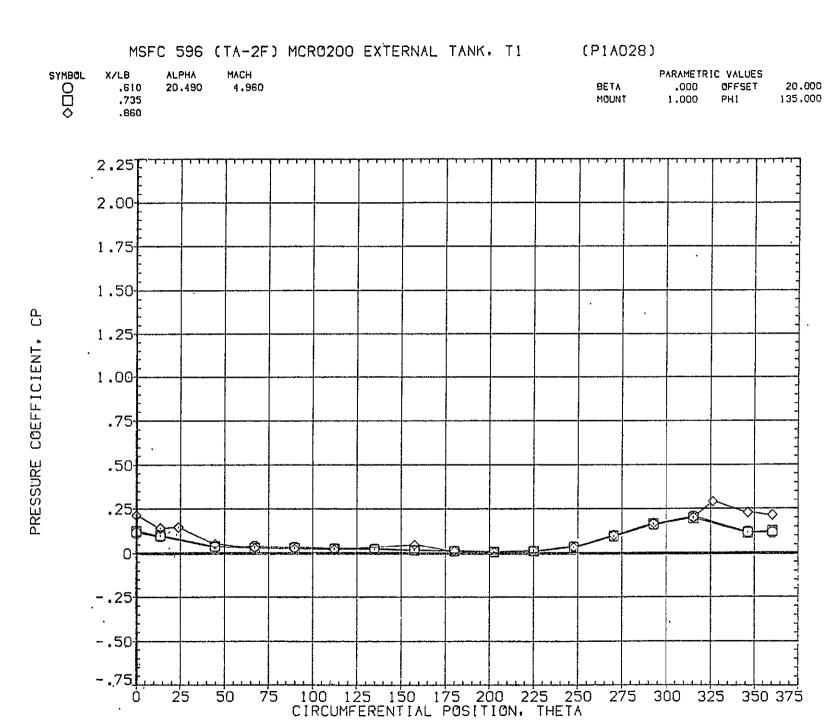


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1831

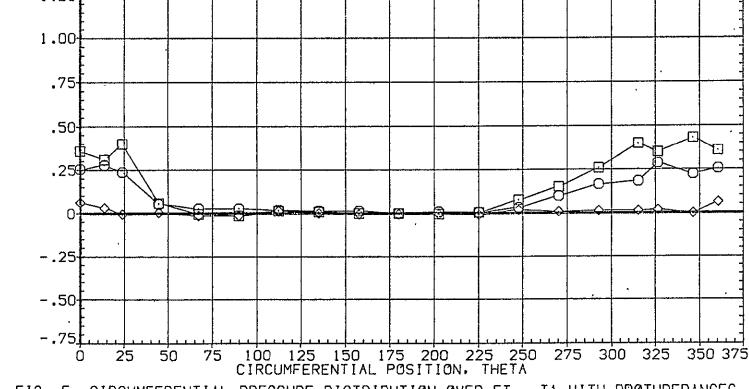


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1832

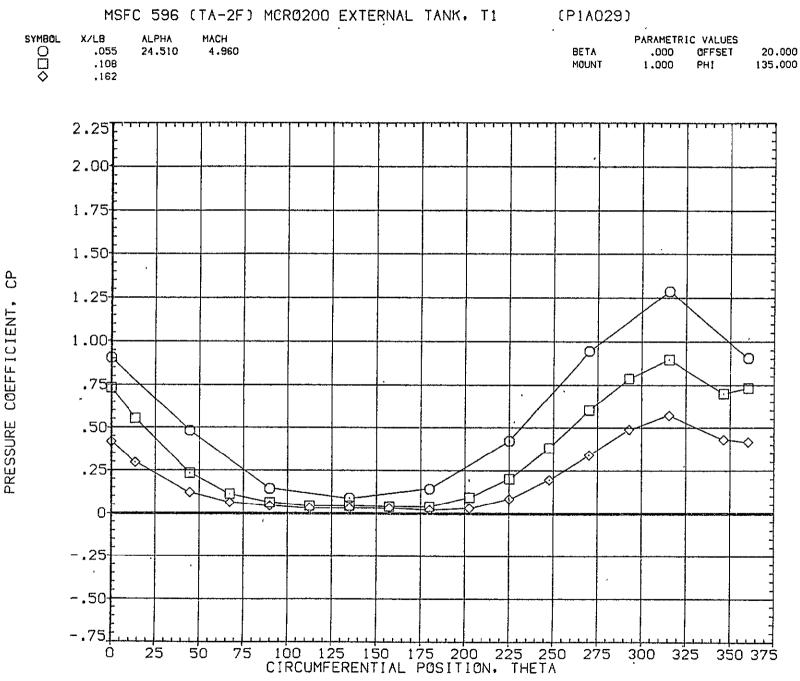


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1833

SYMBOL	X/LB .	ALPHA	MACH	PARAMETRIC VAL	UES
0	.216	24.510	4.960	BETA .000 OFFS	ET 20.000
	.322			1.000 PHI	135.000
۵	.518				

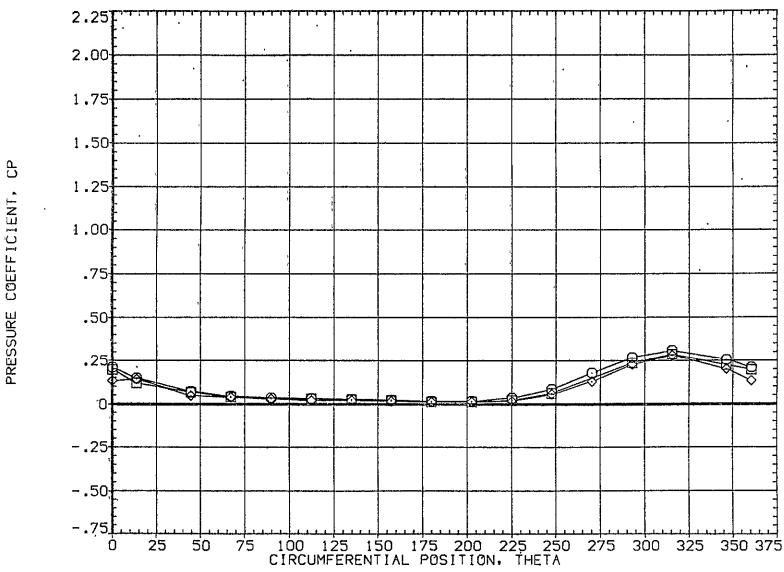
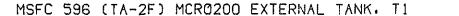


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1834



(P1A029)

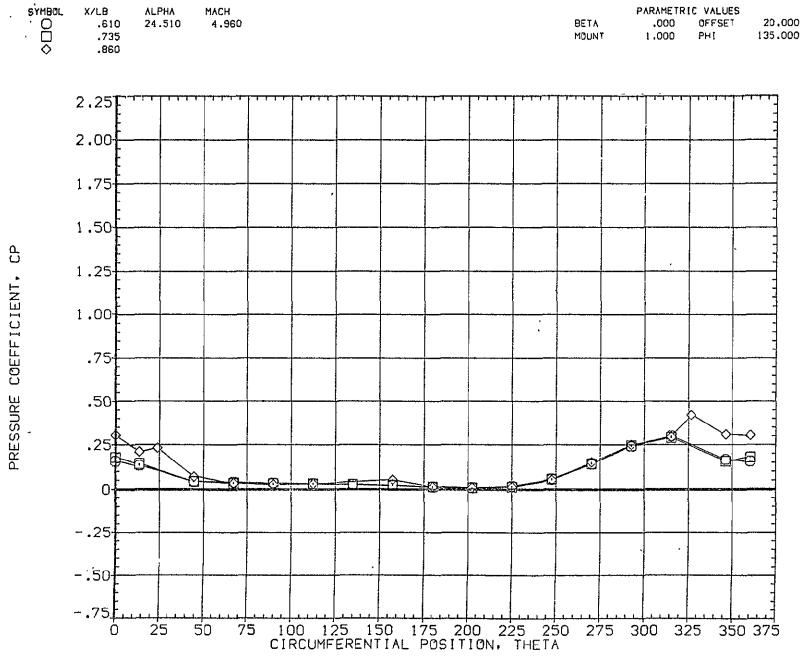


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

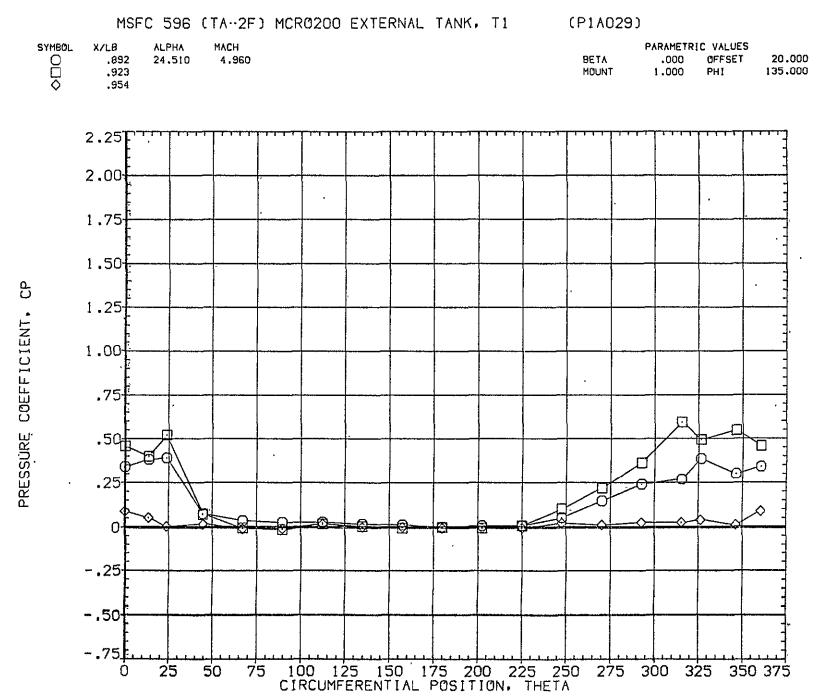


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1836

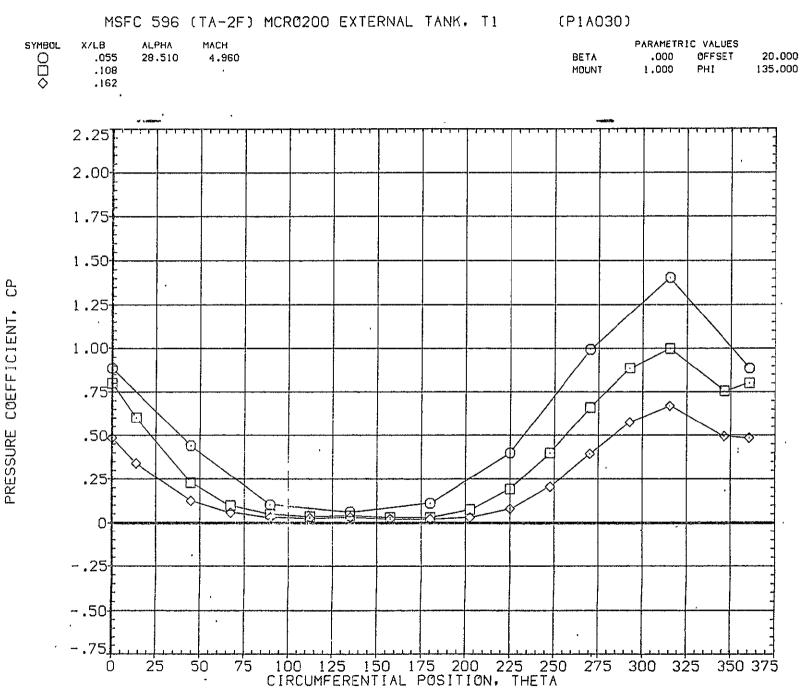


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1837

SYMBOL X/LB

.216

0

ALPHA

28.510

MACH

4.960

BETA

PARAMETRIC VALUES

.000 OFFSET

20.000

000	.216 .322 .518	28.510	4.560							MOUN	T	1.000	PHI	135.0
V	.318													
	0 057	. 					, , , , , , , , , , , , , , , , , , , 		'1 -1 -1 -1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 		1 - 1 - 1 - 1 - 1		, , , , , , , , , , , , , , , , , , , 	
	2.25													=
	2.00				-	 					<u> </u>			-
	<u>.</u>	1						ļ						1
	1.75							<u> </u>	 					
	1.50													
	1.00													1
	1.25		-			<u> </u>	<u> </u>				 			
														1
	1.00													
	.75													
	E					Ĭ								1
	.50		-								-		 	
												2		
	.25									P				\$ -
	0		- O	0 0	-O-	<u> </u>		3				ļ		
	ŧ									·				1
	25		<u> -</u>			<u> </u>				<u> </u>				
				•							-			1
	50							,						
	~.75 <u>F</u>		<u> </u>		 	<u> </u>				_1.1-1-		 		
	0	25	50 75	100 1 CIRCUM	.25 1 FEREN	50 1' Tial :	75 20 POSIT	00 2 10N	25 25 THET	50 2' A	75 3	00 3:	25 35	0 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1838

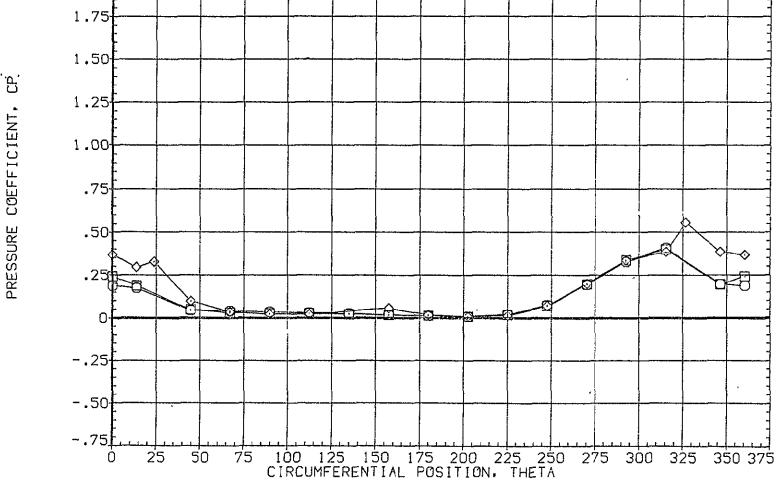
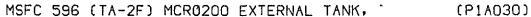


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1839





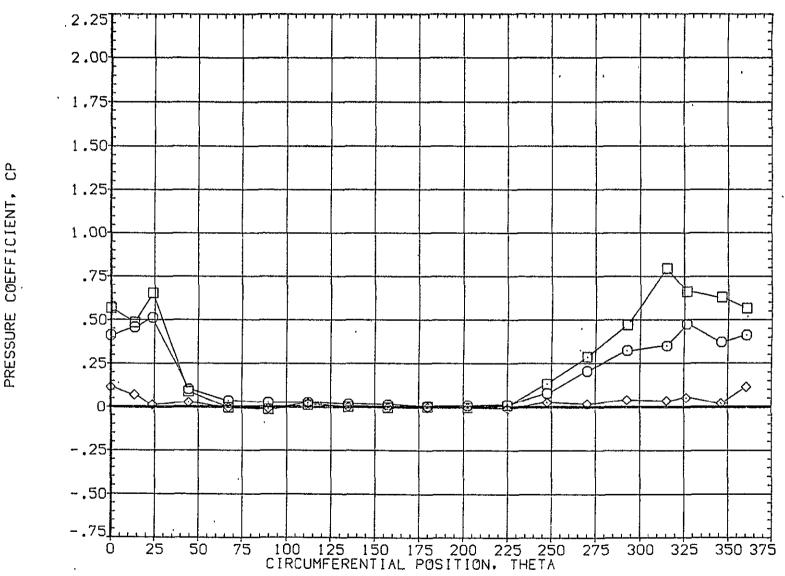
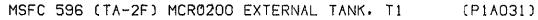


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES. PAGE 1840





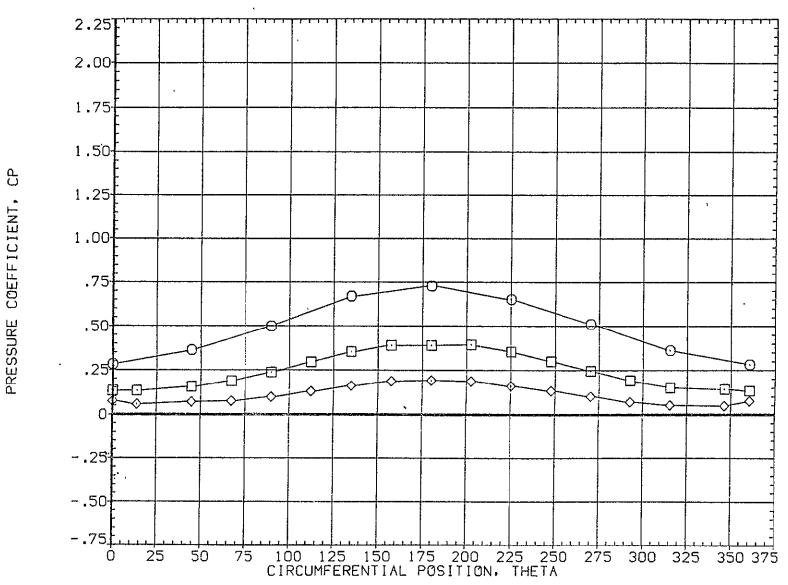


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1841

SYMBOL	X/LB	ALPHA	MACH				PARAMETR	IC VALUES	
0	.216	-8.290	4.960			BETA	.000	OFFSET	.000
ă	.322			•		MOUNT	1.000	PHI	180.000
\Diamond	.518						_	**	

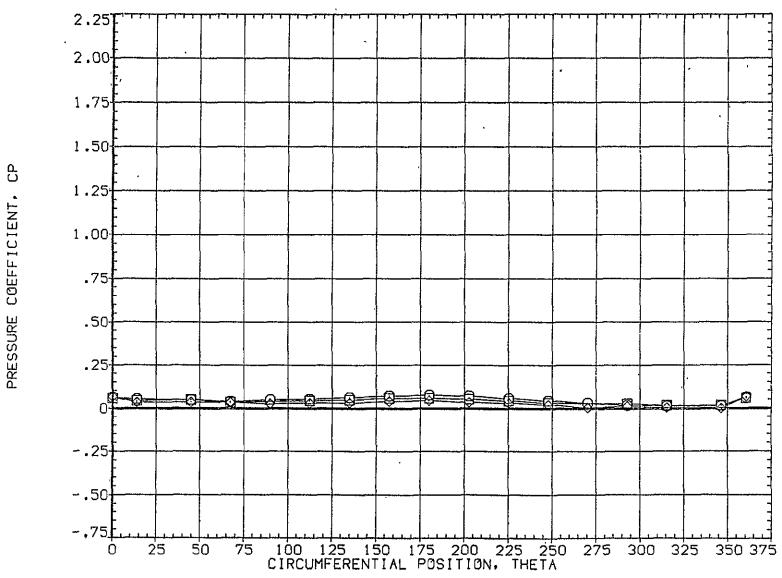


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1842

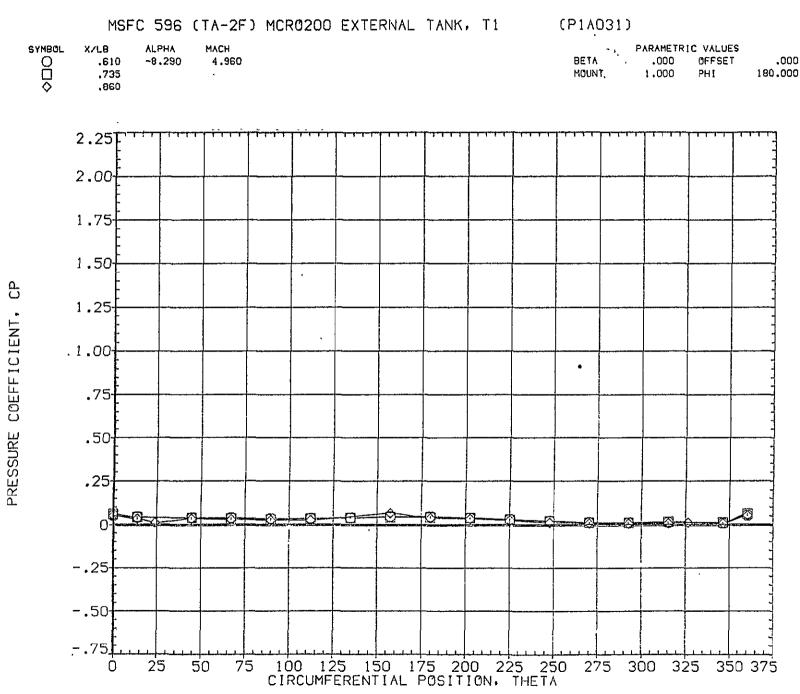


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1843



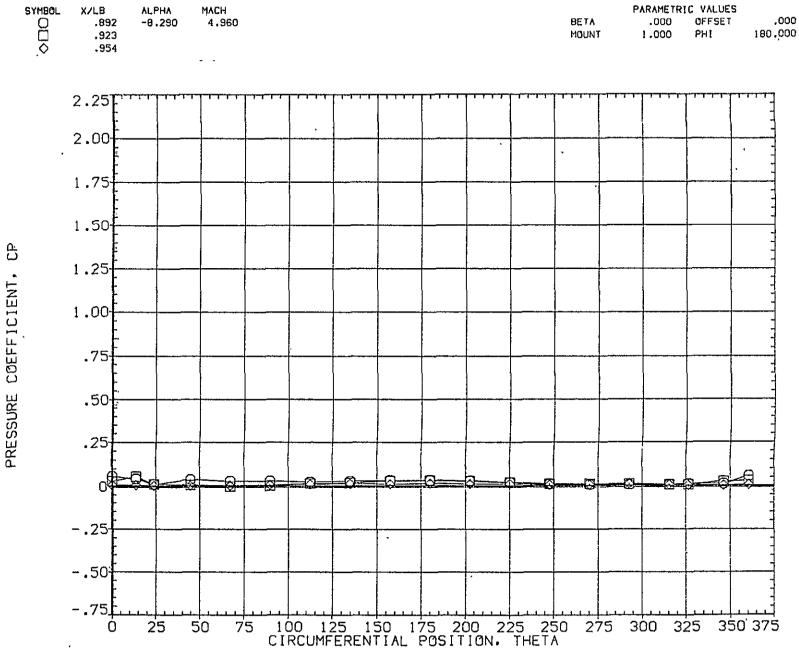


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1844

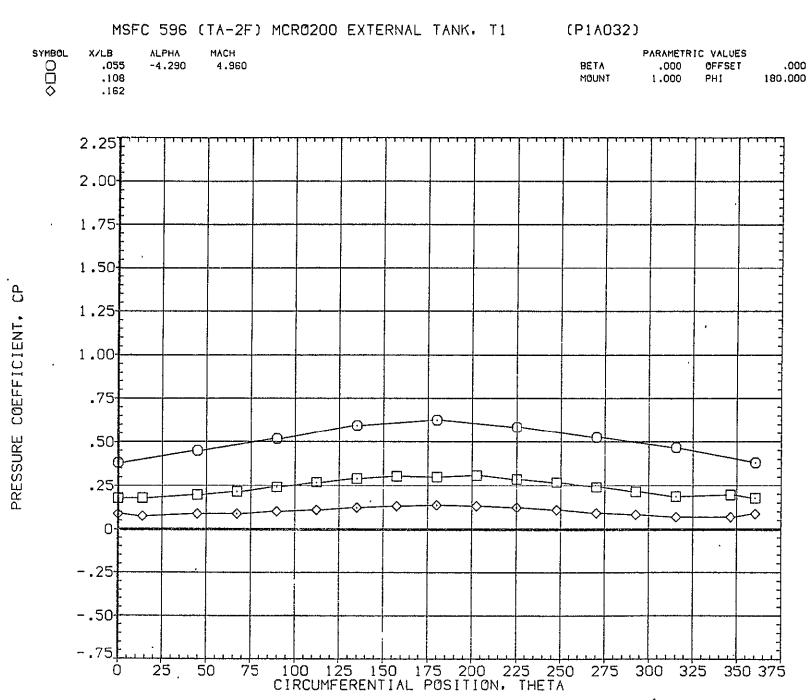


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1845

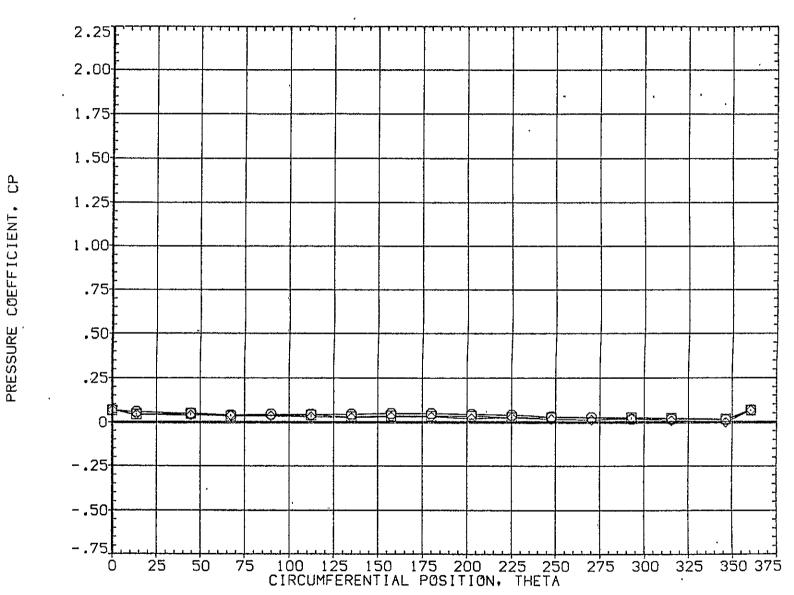


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1846

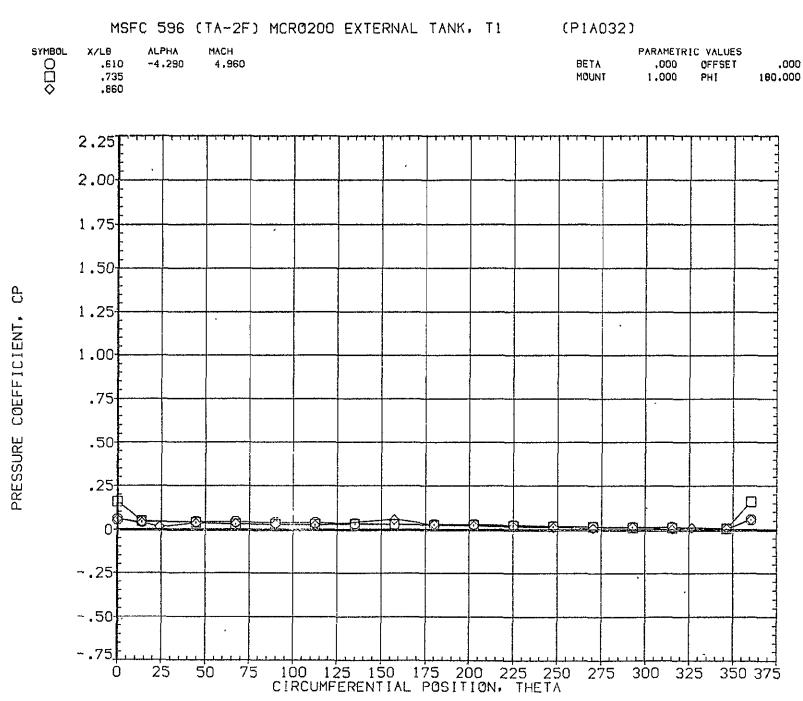


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



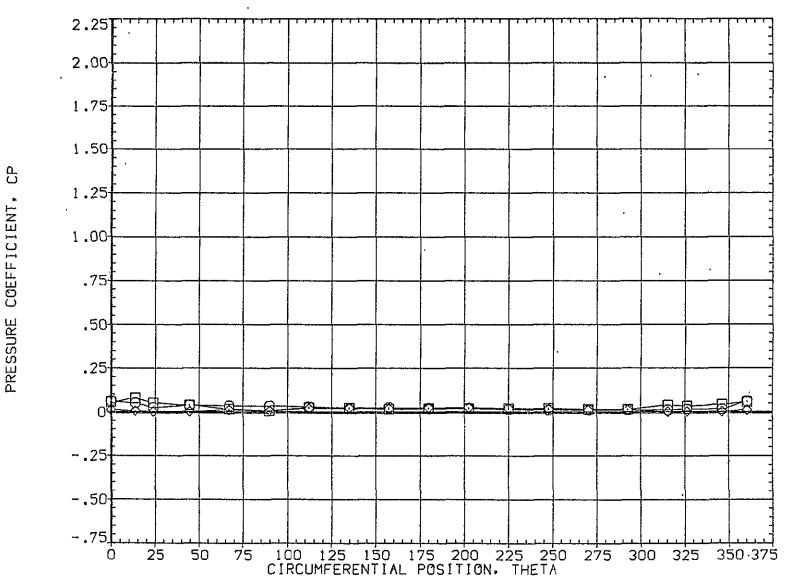


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1848

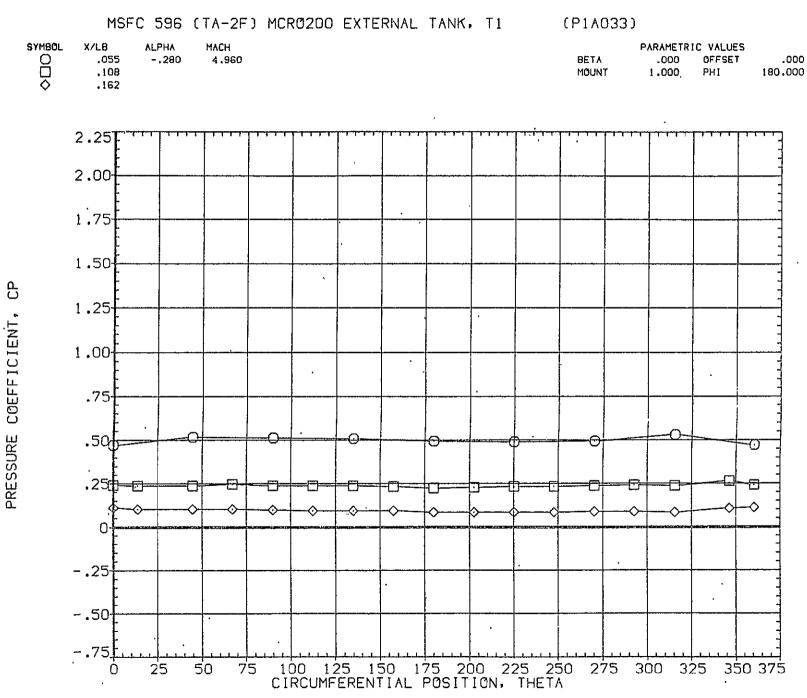


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

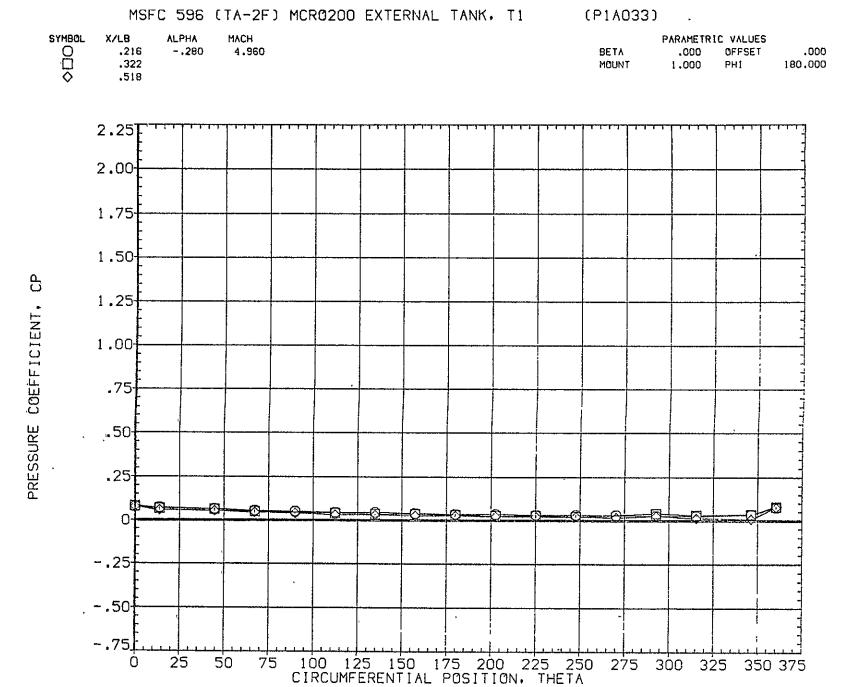


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1850

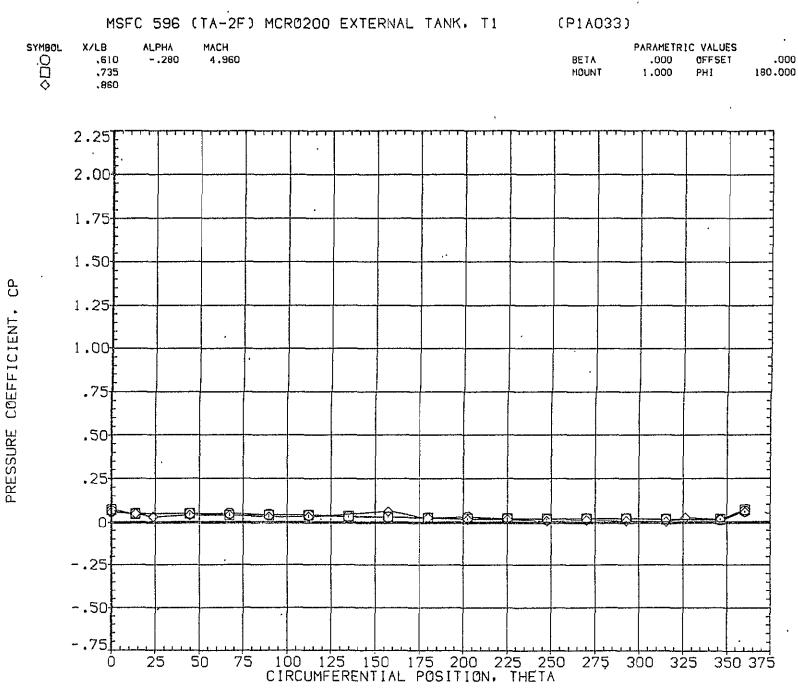
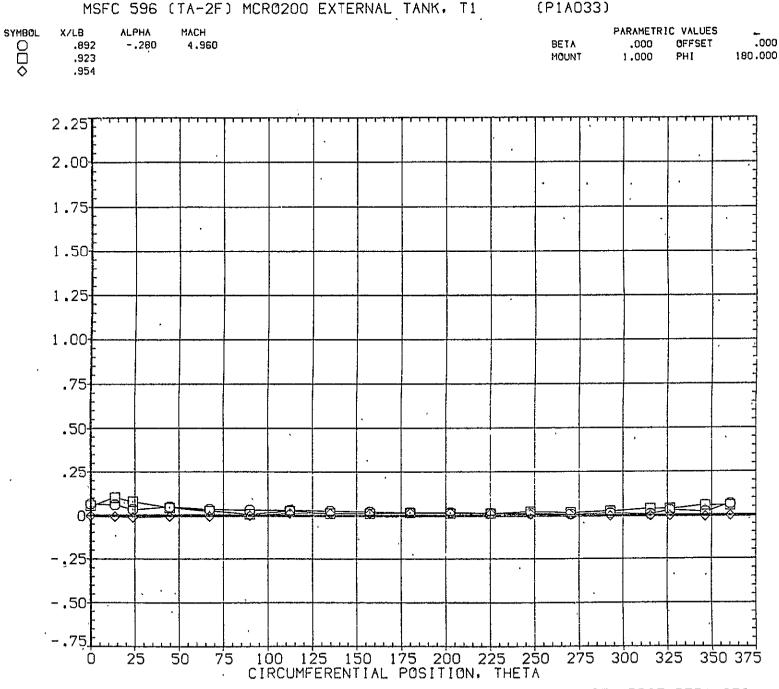


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1851



S

PRESSURE COEFFICIENT,

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1852

MSEC 596 (TA-2E) MCRO200 EXTERNAL TANK, T1 (P1A034) SYMBOL X/LB ALPHA MACH PARAMETRIC VALUES 000 .055 3.730 4.960 BETA .000 OFFSET .000 .108 MOUNT 1.000 PHI 180,000 .162 2.25 2.00 1.75 1.50 G) 1.25 COEFFICIENT, 1.00 .75 -0 PRESSURE .50 0 -.25 .-.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 75 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1853



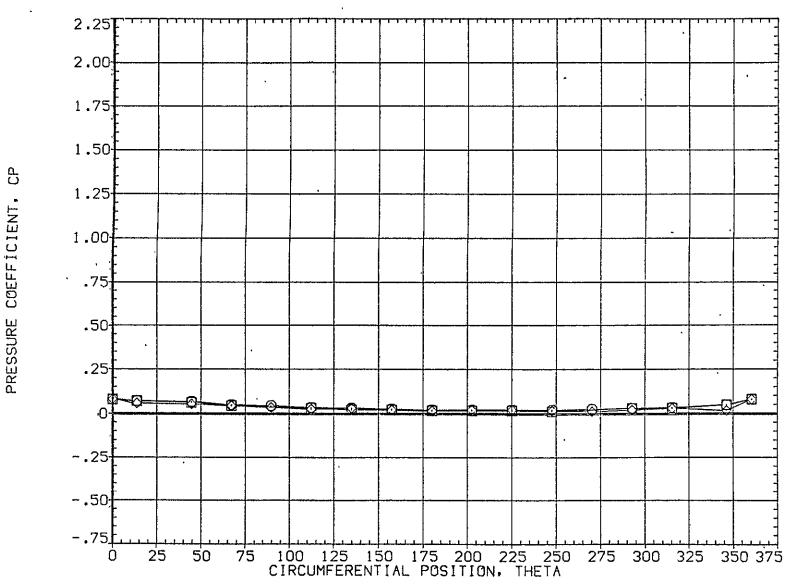


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1854

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A034)

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 3.730 .610 4.960 BETA OFFSET .000 .000 .735 MOUNT 1.000 PHI 180,000 .860

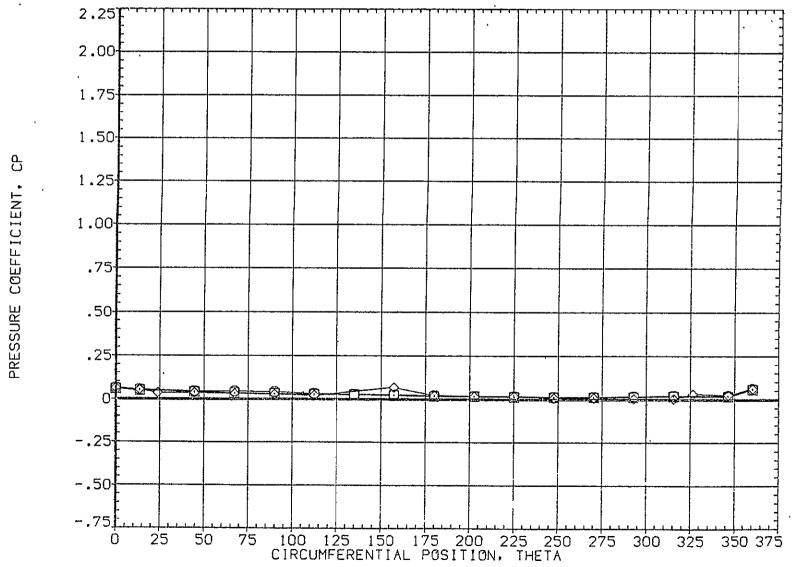


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

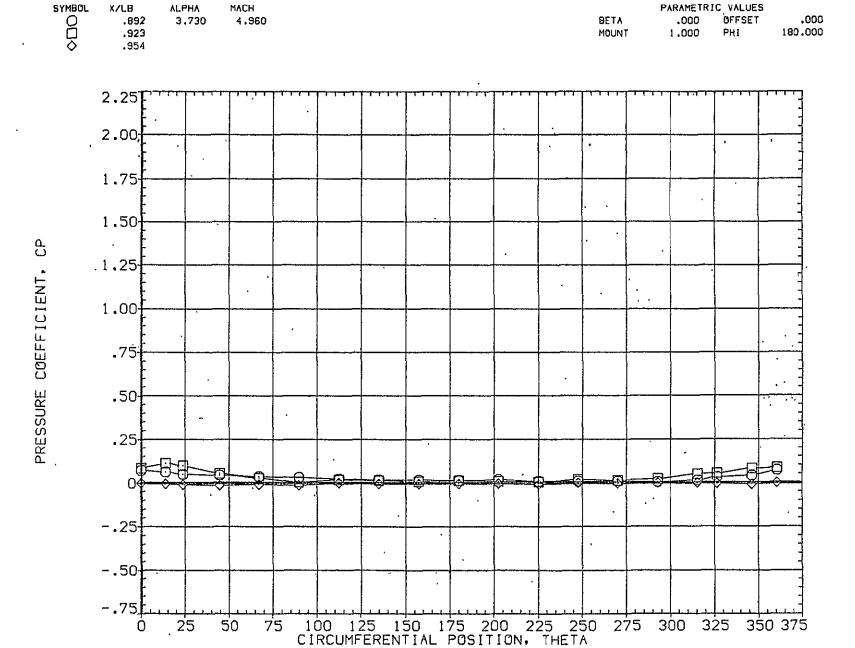


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1856

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1857

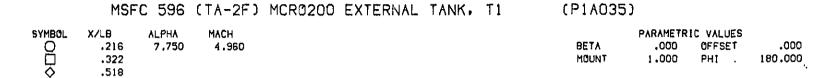
CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.75

50

75



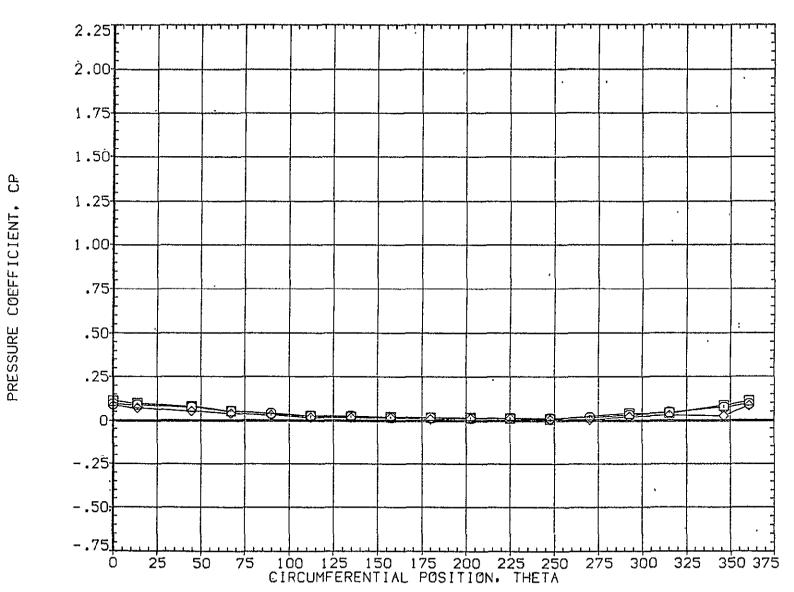


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1858

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK. (P1A035) X/LB **ALPHA** MACH PARAMETRIC VALUES SYMBOL 000 .000 . ,610 7.750 4.960 BETA .000 OFFSET .735 MOUNT 1.000 PHI 180.000 .860 2.25 2.00-1.75 1.50-S 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 0 -.25 -.50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1859

100 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION, THETA

275 300 325 350 375

-.751

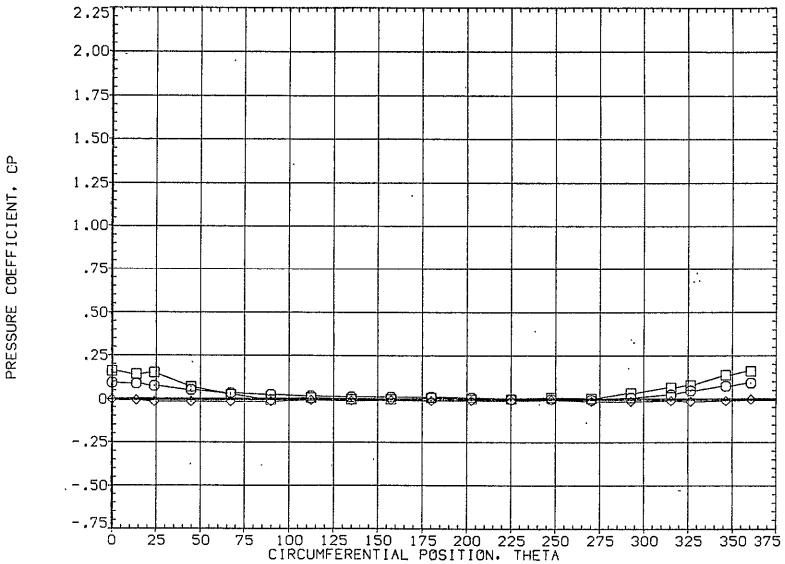
75

50

MCEC	500	CTALOEN	MCDMODA	EXTERNAL	TANK	T 1
Maru	סבנ	てコハヤノドリ	- MCRUZUU	FXIFRNAL	I ANA	i

•	-			-	_		-
r	\Box	1	Α	n	-7	-	1

SYMBOL X/LB	ALPHA	MACH		PARAMETR	IC VALUES	
O ,892 ,923	7.750	4.960	BETA MOUNT	.000 1.000	OFFSET PHI	.000 000,081
♦ ,954 2 25TTT						



FÍG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1860

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A036) SYMBOL X/LB ALPHA MACH PARAMETRIC VALUES 000 12,450 4.960 20.000 .055 BETA .000 OFFSET .108 MOUNT 1.000 PHI 180,000 .162 2.25] 2.00 1.75 1.50-9 1.25 COEFFICIENT, 1.00 · 75 PRESSURE -.25 -.50 100. 125 150 175 200 225 250 CIRCUMFERENTIAL POSITION. THETA 50 275 300 325 350 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1861

SYMBOL	X/LB	ALPHA	MACH	PARAMET	PARAMETRIC VALUES		
Q	.216	12.450	4.960	BETA .000	OFFSET	20.000	
	.322			MOUNT 1.000	PHI'	180.000	
^	.518						

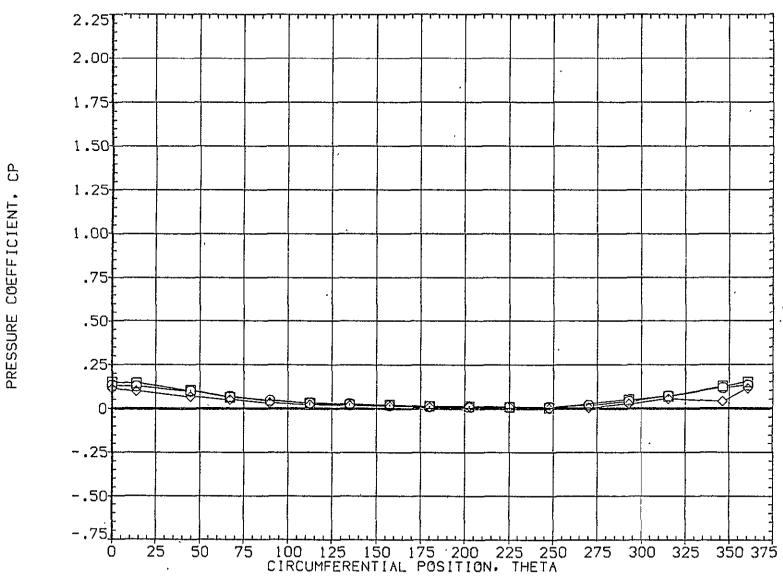


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1862

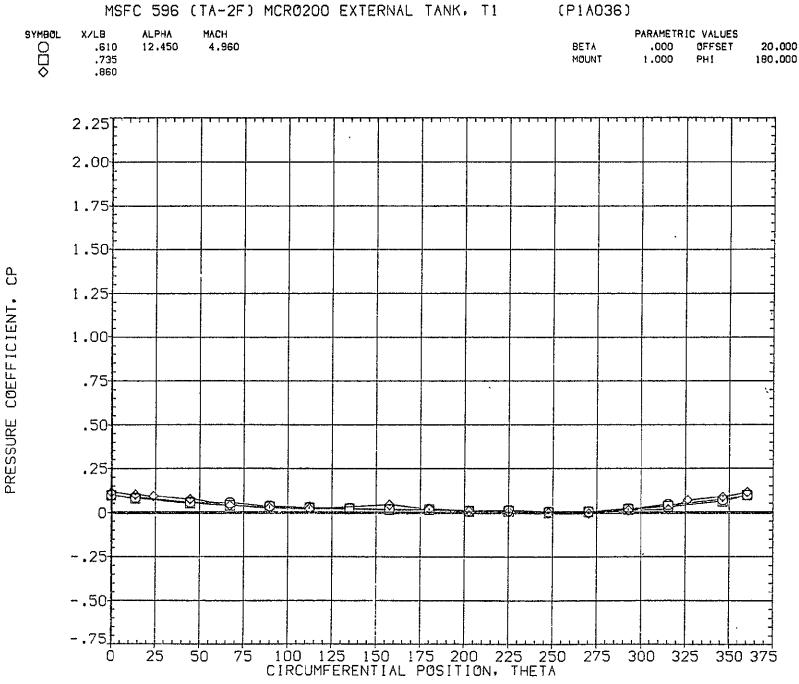
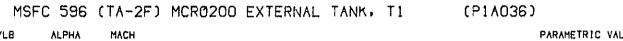


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES





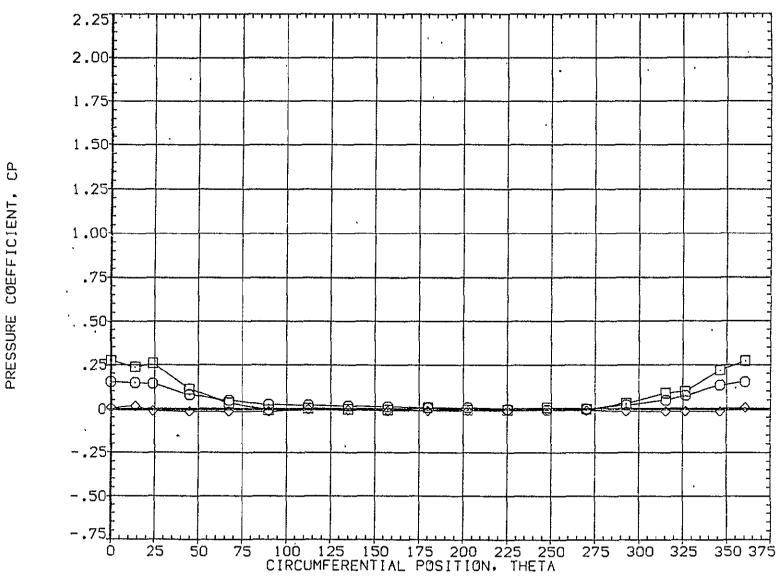
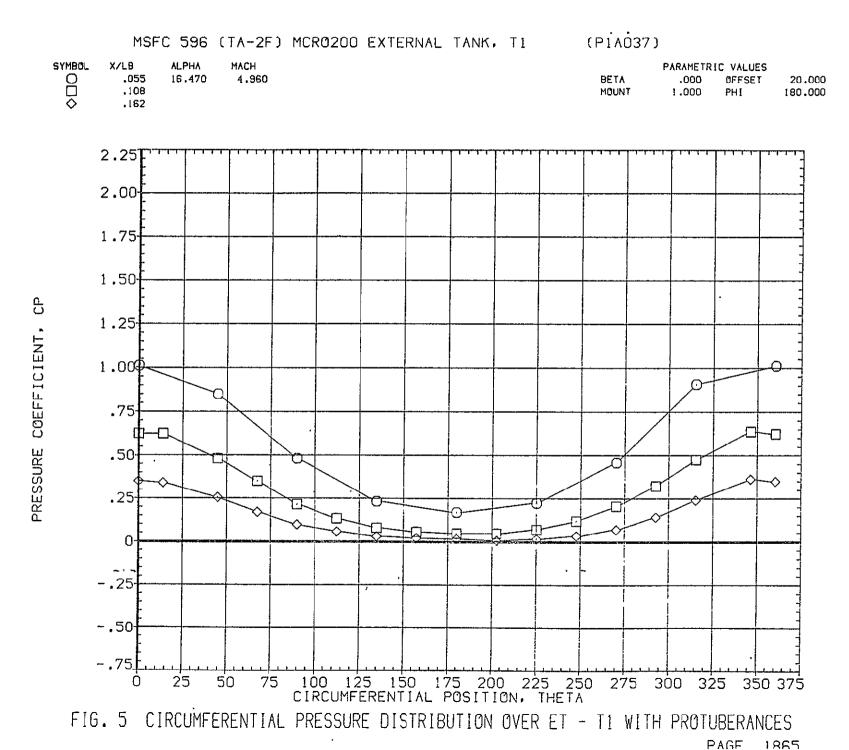


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1864



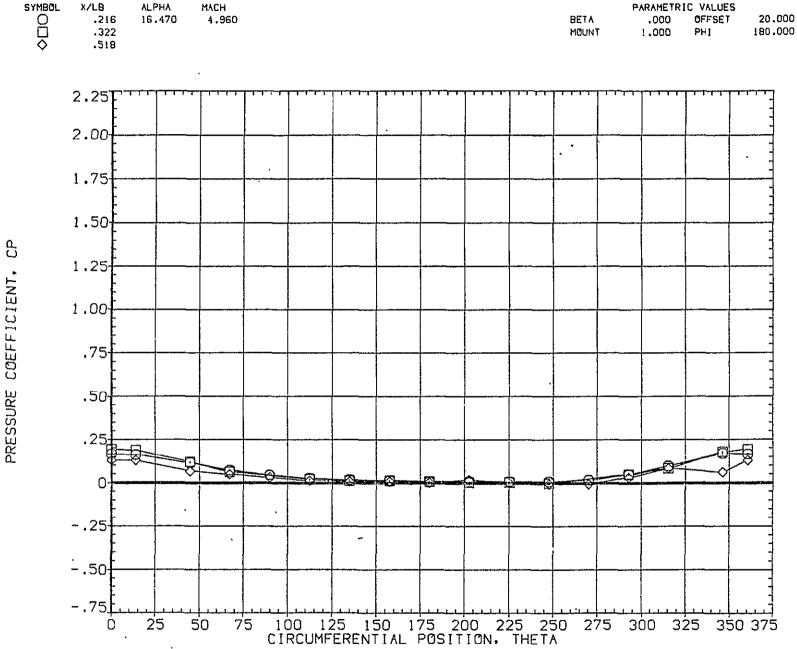


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1866

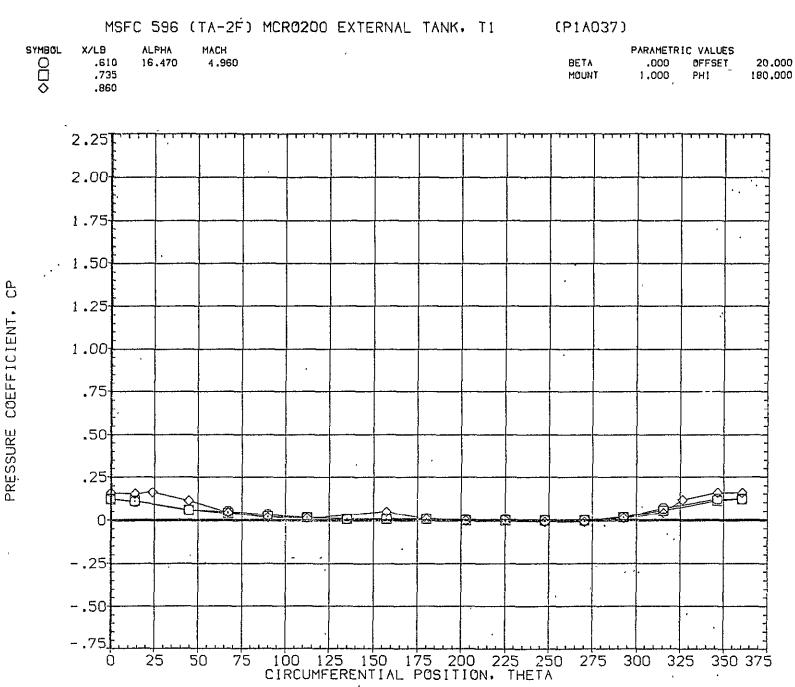


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1867

X/LB

ALPHA

MACH

PARAMETRIC VALUES

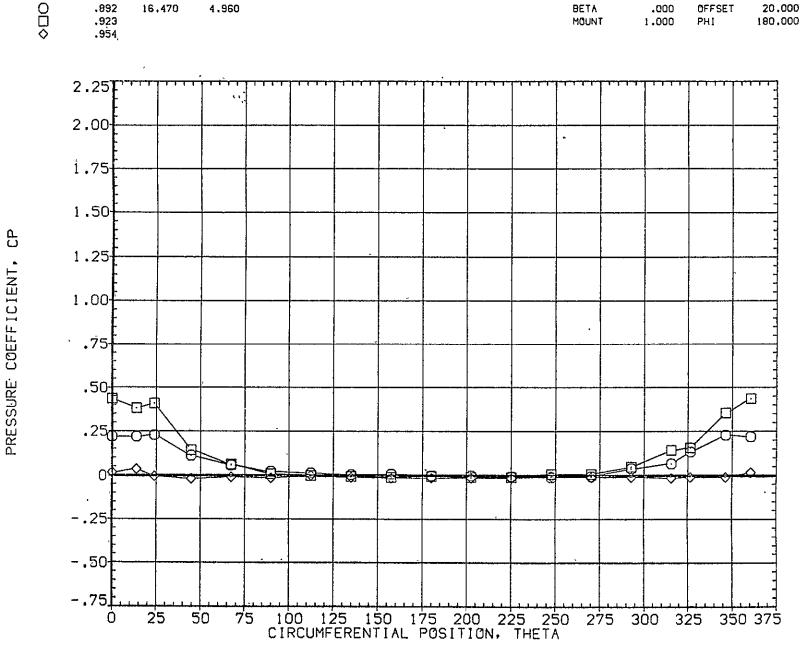


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1868

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A038) PARAMETRIC VALUES X/LB ALPHA . SYMBOL MACH 000 BETA .000 OFFSET 20,000 20.490 4.960 .055 MOUNT 1H9 180.000 1.000 .108 ,162 2.25 2.00 1.75 1.50-S 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 冚 .25 0--.25 -.50 -.75‡ 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1869

MCEC	500	(TA-2E)	MCDMOOD	EXTERNAL	TANK	٦
TIOT U	JED	ししひてとだり	MURUZUU	EX LERIVAL.	1 (1)(1)	

X/LB

ALPHA

MACH

(P1A038)

PARAMETRIC VALUES

.3	216 2 322 518	11PHA 20.490	4.960								BÉTA MOUN		.000 1.000	OFFSET PHI	1
2.2	5 [, , , , , , ,	1	. 		1,,,,	71777	7	,,,,,	7		 	, , , , , , , , , , , , , , , , , , , 	1	
2.0	0		-				<u> </u>	-	<u> </u>				-		
1.7	5														
1.5	0		•												
1.2	5 														
1.00						<u> </u>			,						
.75	5					-									
.50)								_		 		_		
.29		- C							 	,					1
()	+		0	0	0	0-	Ğ.		 	9	-6			
2	5			·····					-						
50)								-		<u> </u>	<u></u>			
75	5 	25 :	50 7	 5 1	00 1	25 1	50 1		200 2 TION:	 	50 2	75 ;	300 3	25 35	0 3

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE - 1870

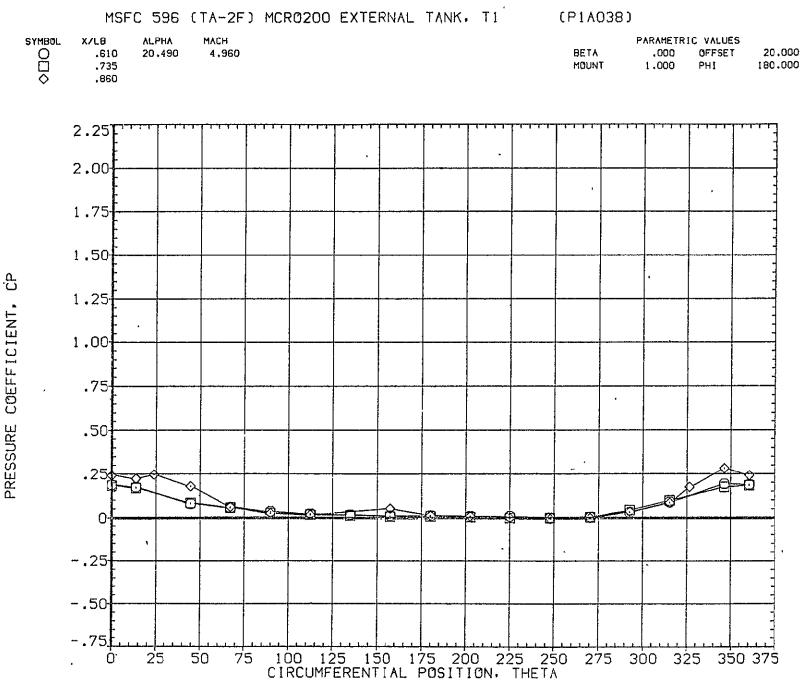


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1871

000

.954



MOUNT

1.000

PH!

180,000

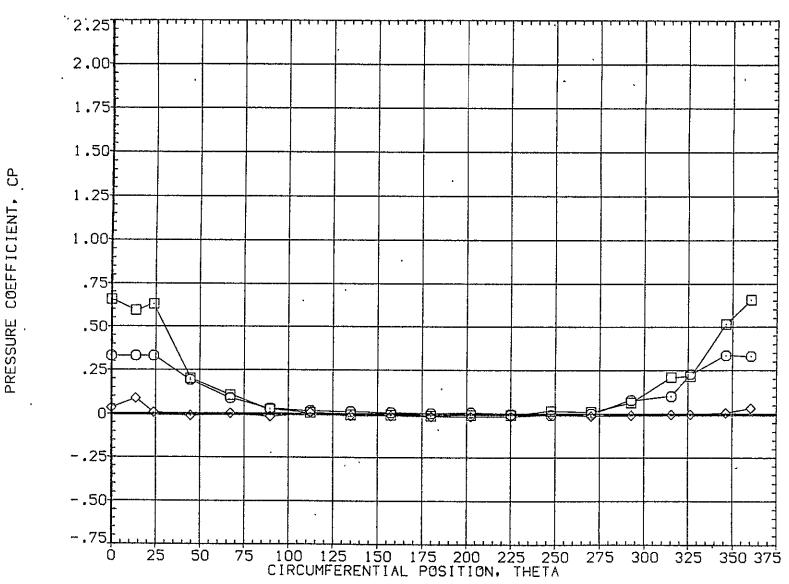


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1872

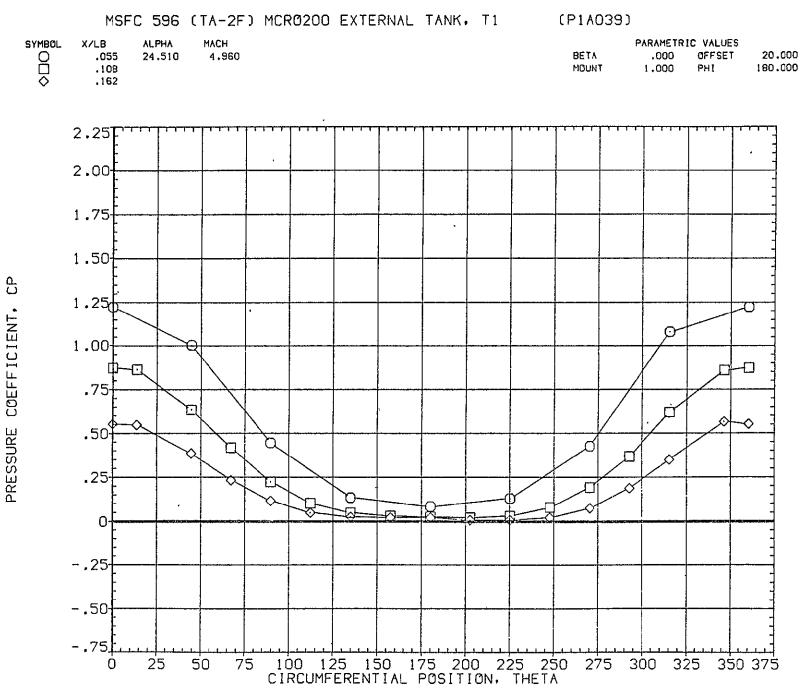


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1873

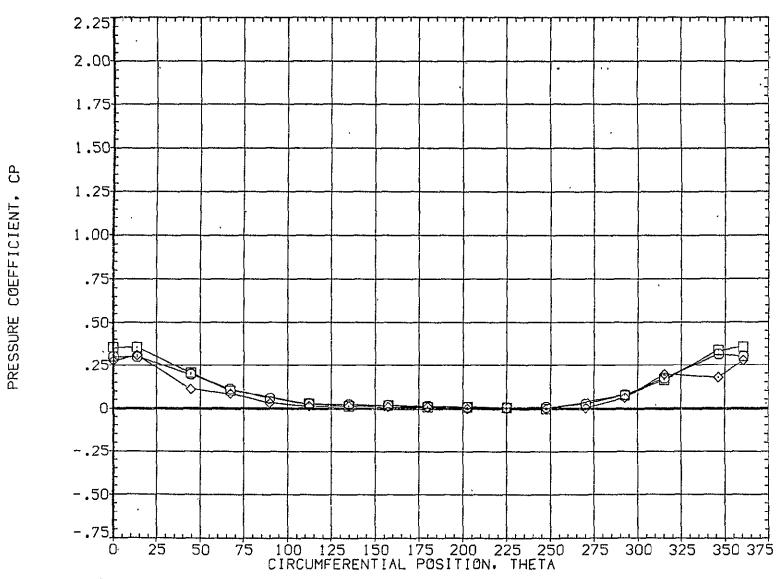


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1875

75

50



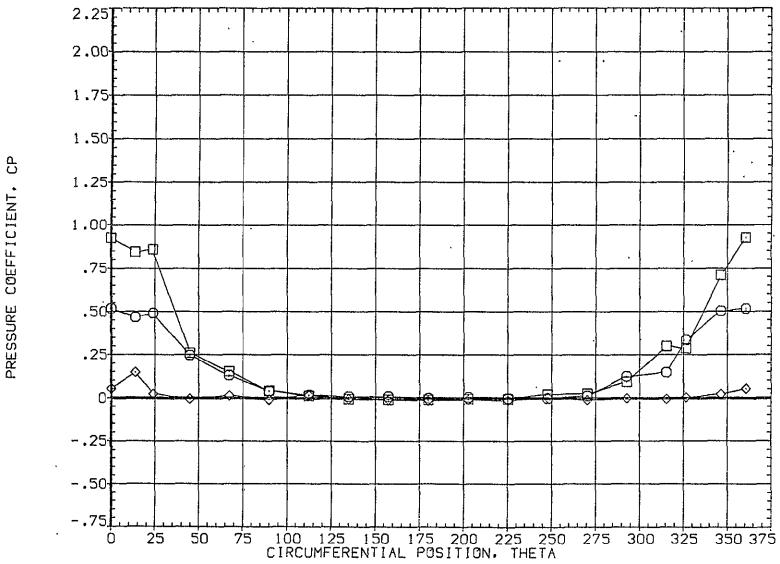


FIG. 5. CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1876

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1

(P1A040)

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 .055 28.560 4.960 BETÁ OFFSET 20.000 .000 .108 MOUNT 1.000 PHI 180,000 .162

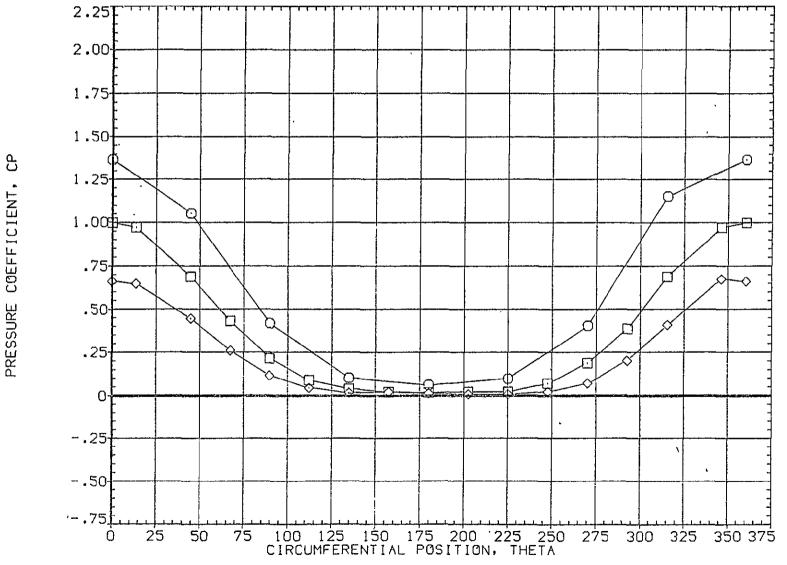


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



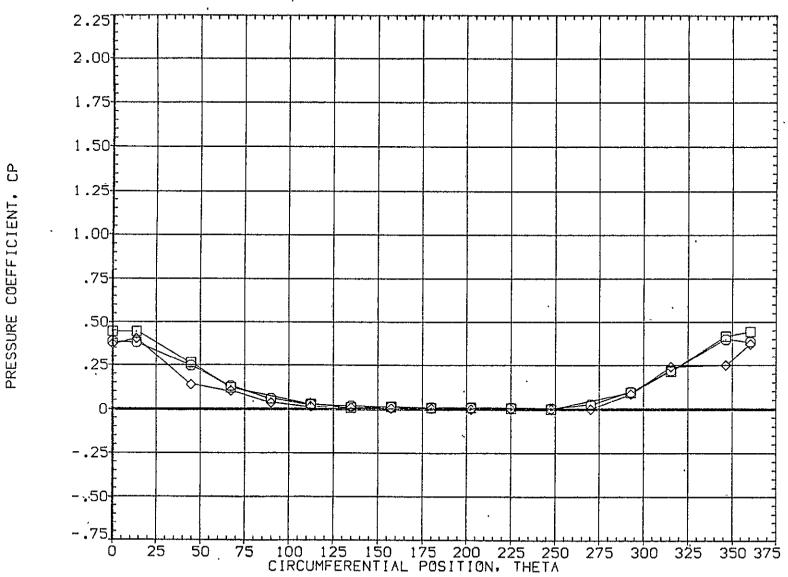


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1878

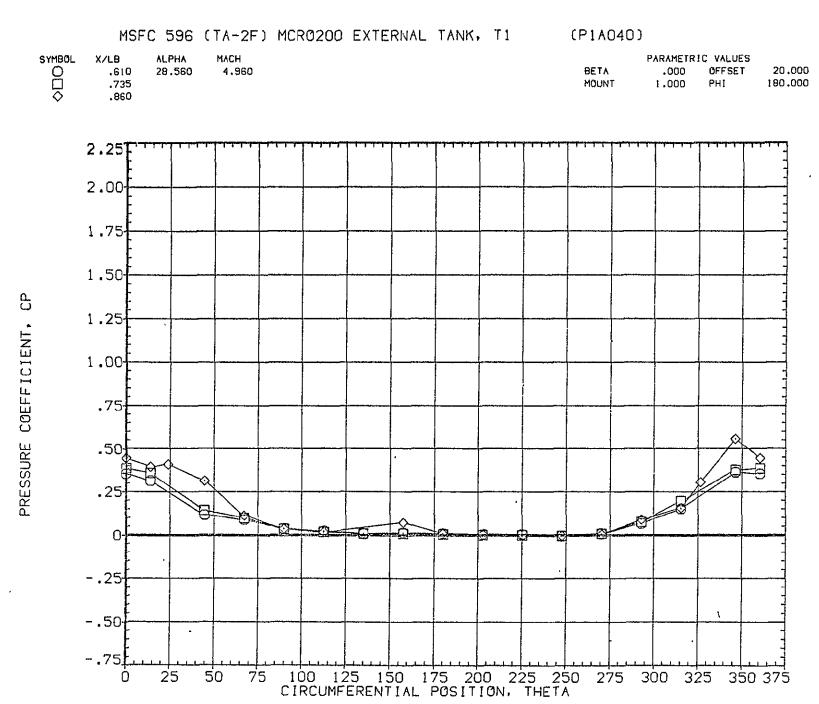


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1879



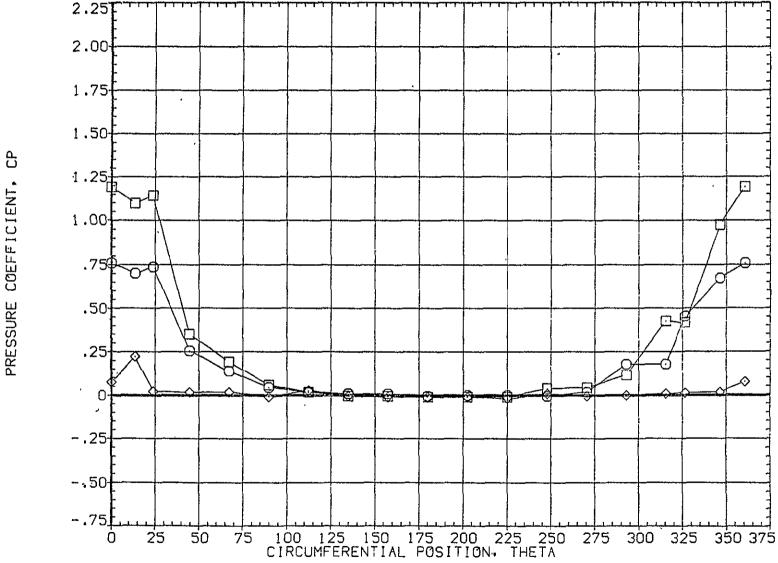


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

PAGE 1889

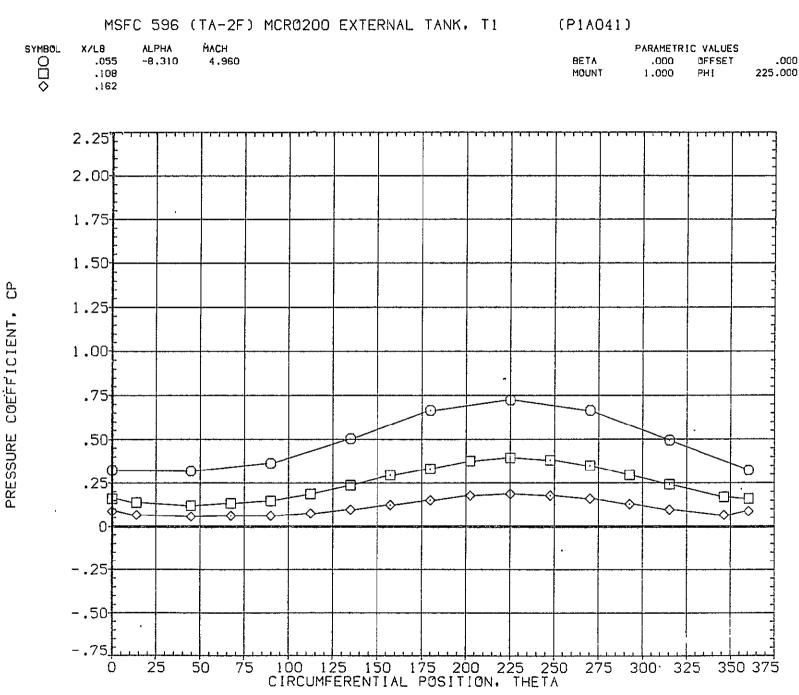


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

.518

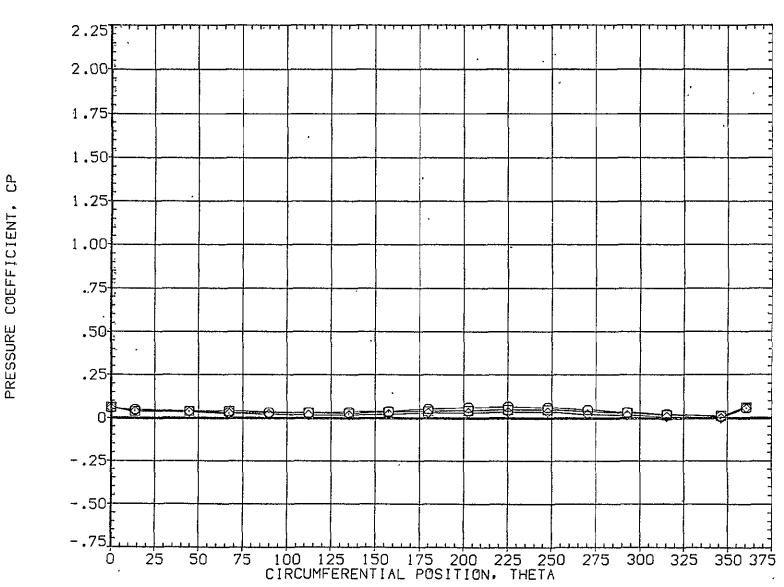


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1882

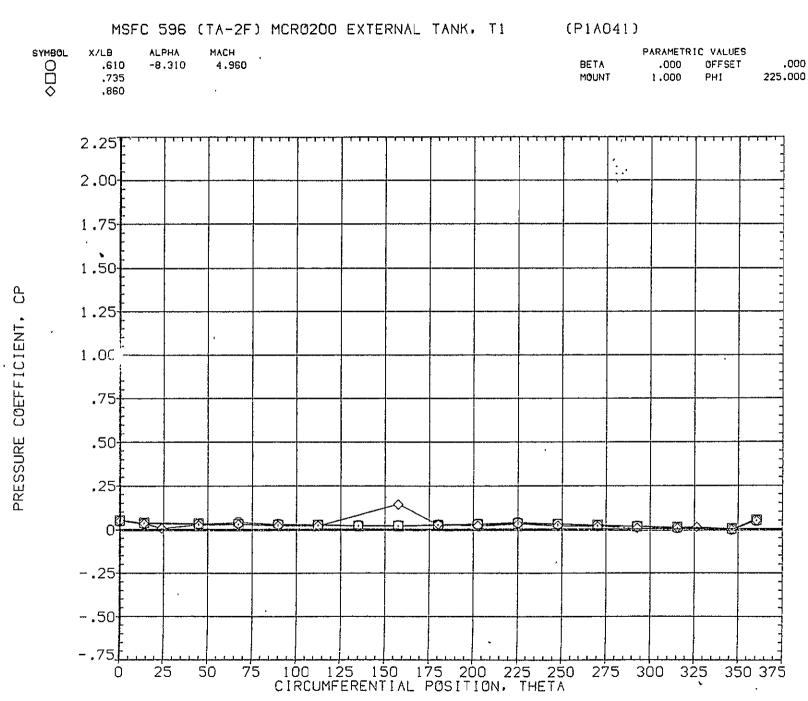


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1883

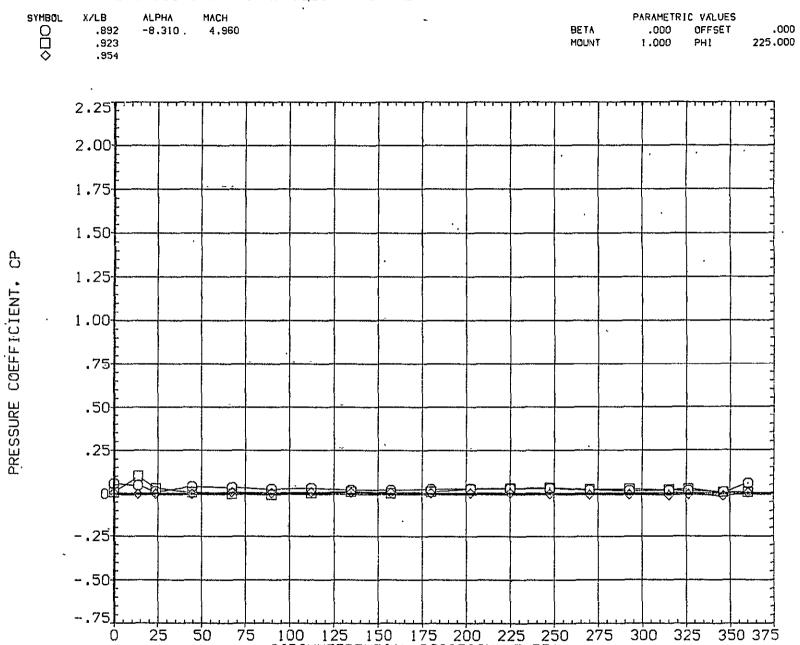


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1884

CIRCUMFERENTIAL POSITION, THETA

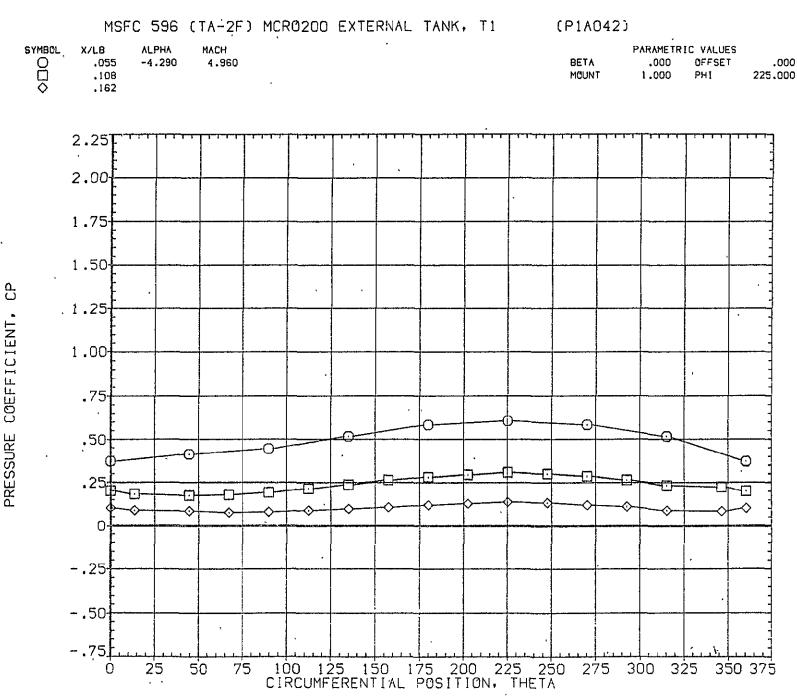


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1885

SYMAOL X/LB ALPHA PARAMETRIC VALUES MACH 000 .216 -4.290 4.960 BETA .000 OFFSET .000 .322 MOUNT 1.000 PHI 225,000 .518

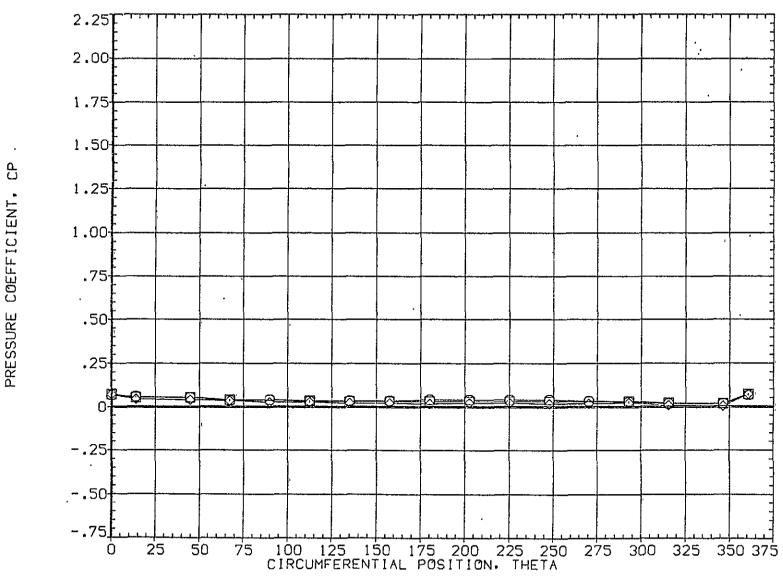


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES - PAGE 1886

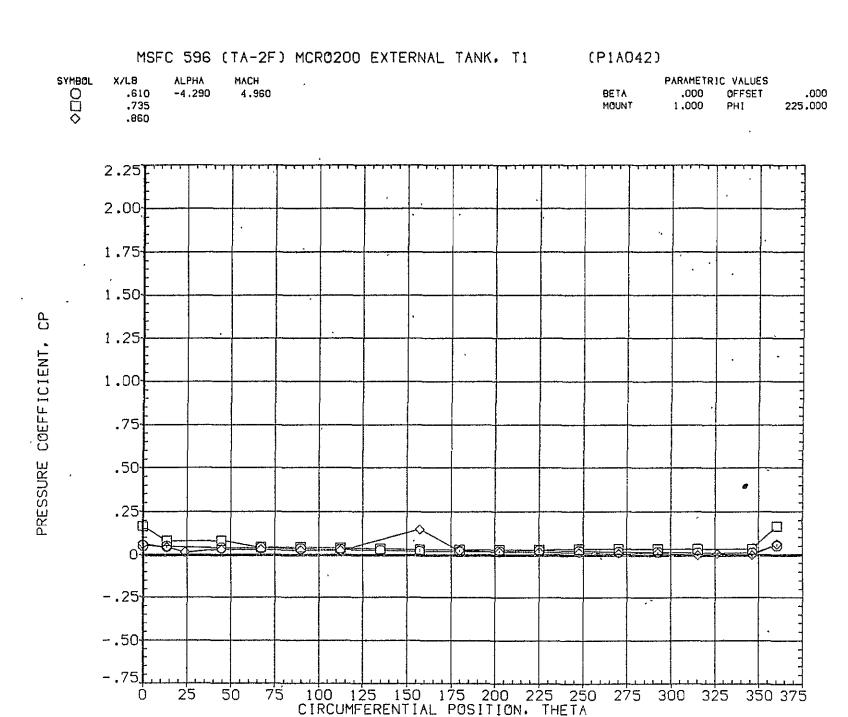


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE: 1887



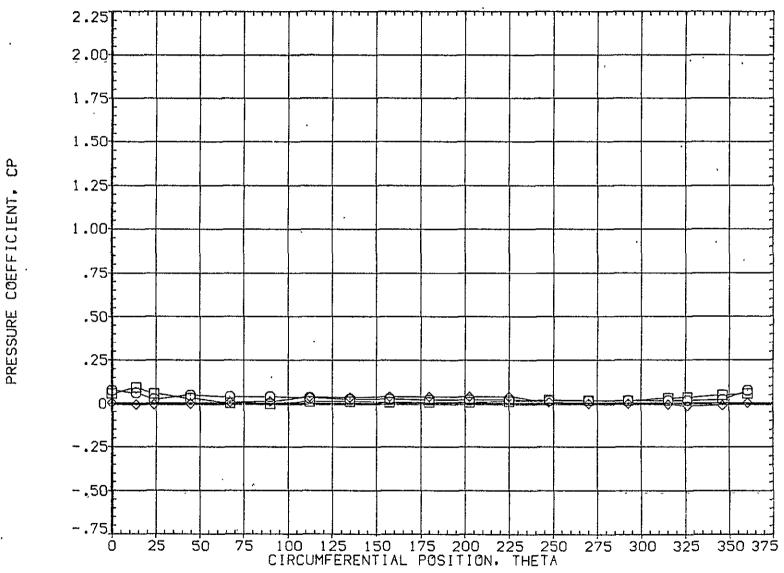


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES.

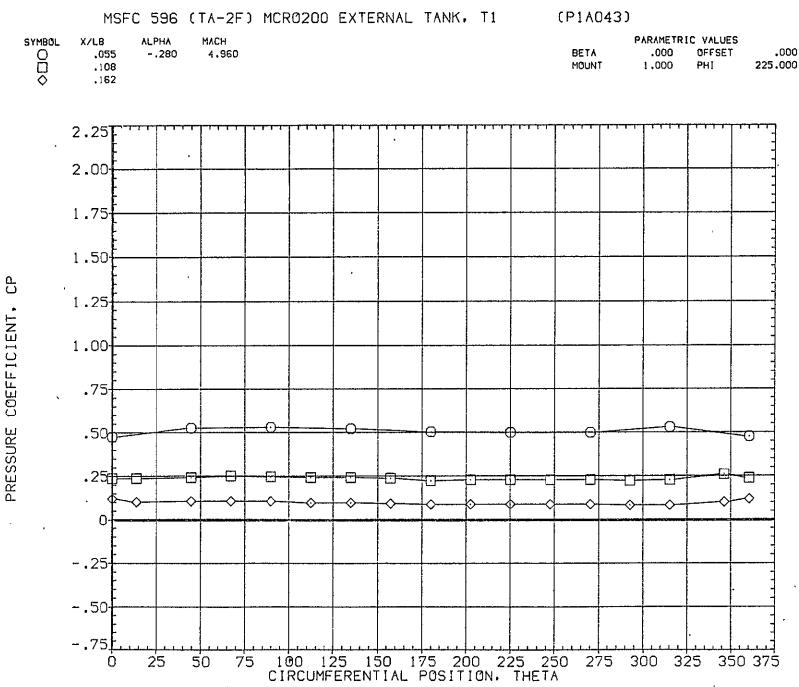
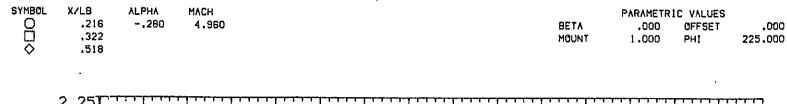


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1889



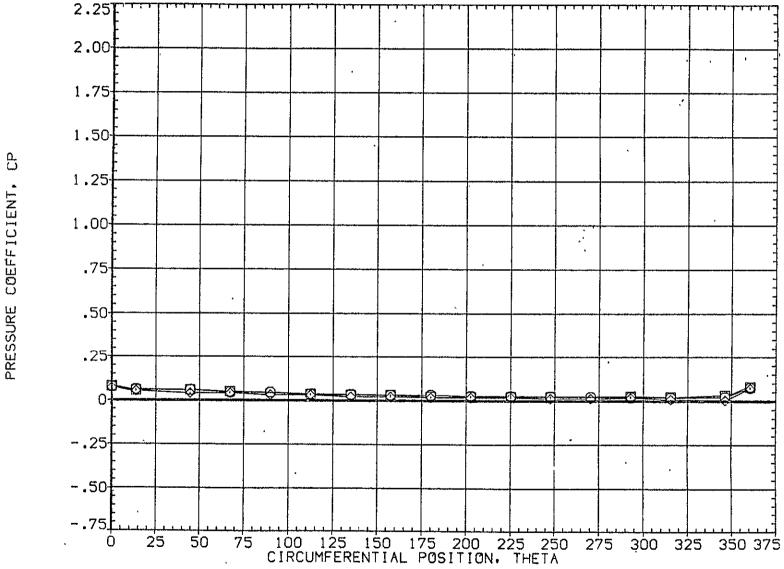


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1890

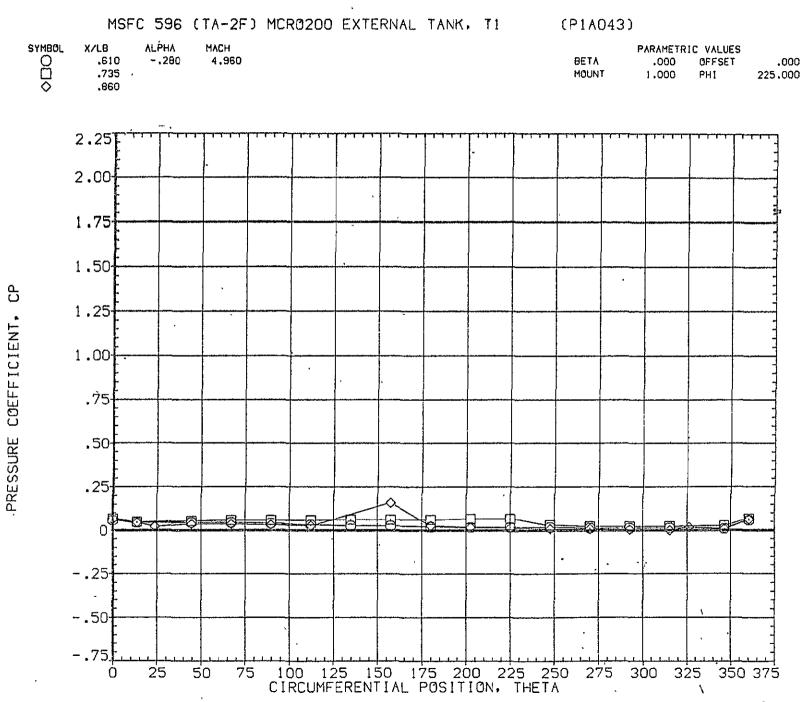


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1891

X/LB

ALPHA

MACH

PARAMETRIC VALUES

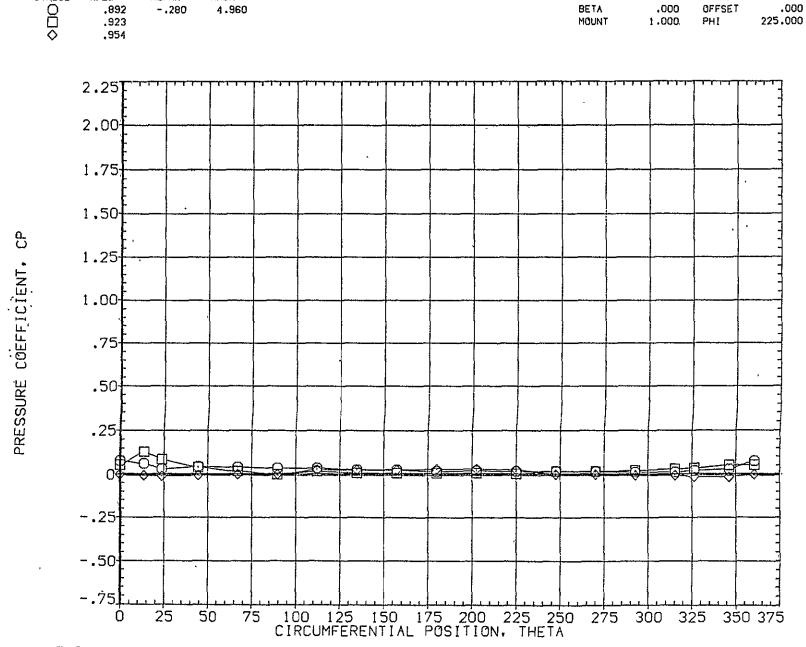


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1893

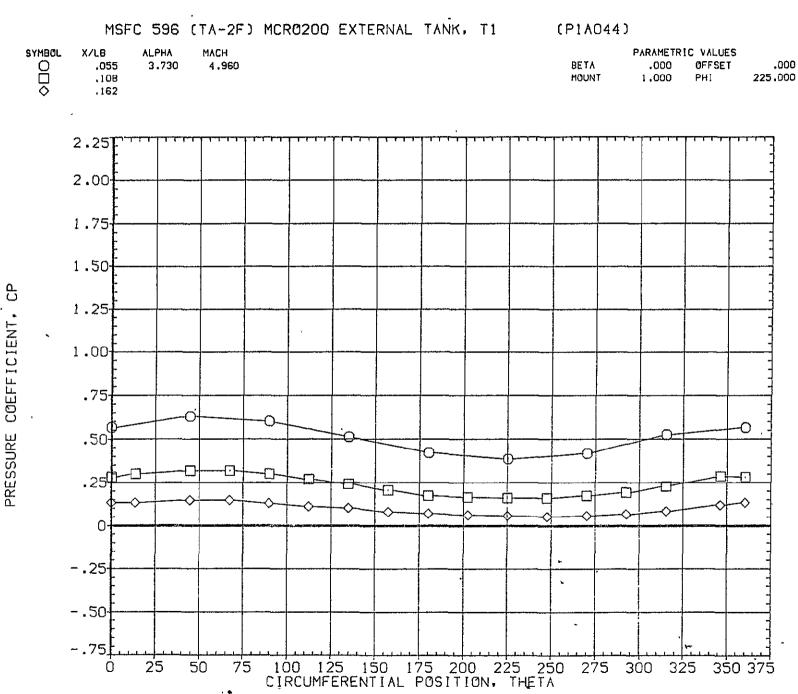


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1893

SYMBOL	X/LB	ALPHA	MACH	PARAMETRI	PARAMETRIC VALUES			
0	.216	3.730	4.960	BETA ,000	OFFSET	.000		
	.322			000.1 TAUØM	PHI	225.000		
\diamond	.518							

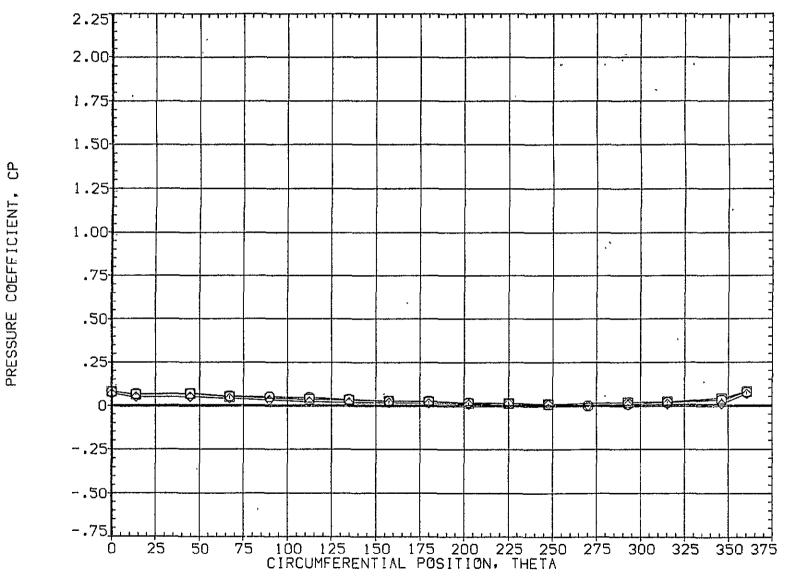


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1894

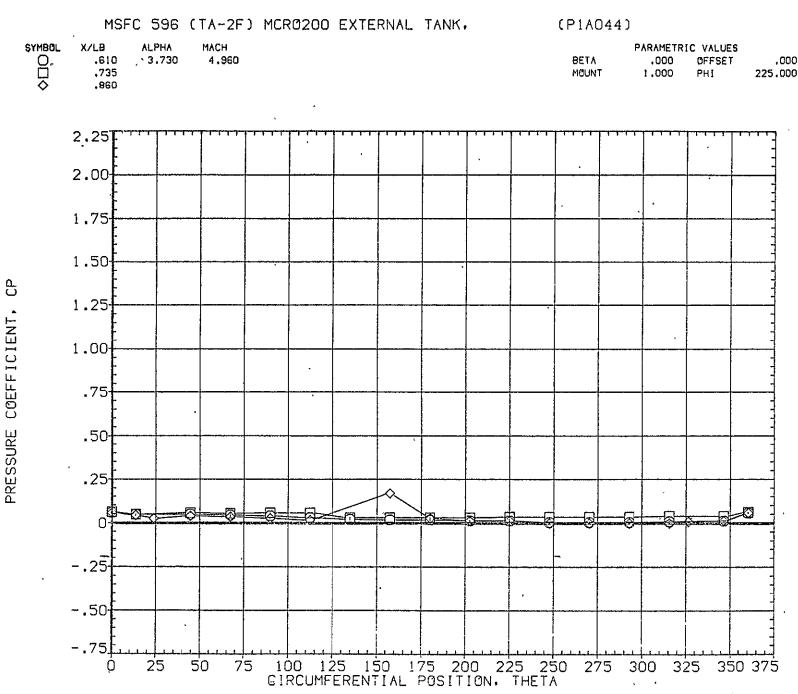


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1896

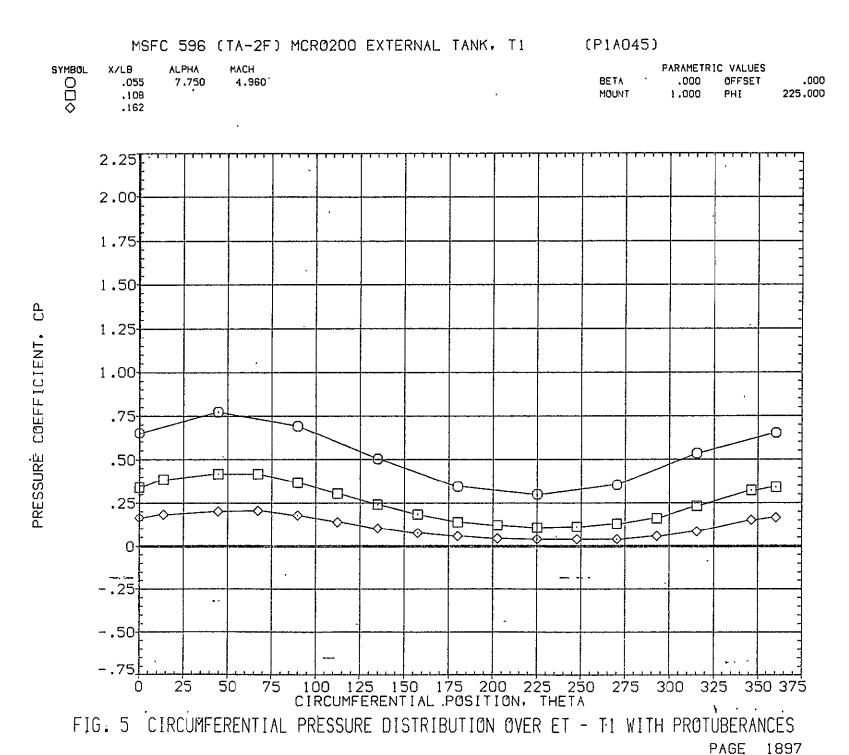
100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

- :50

25

50

75



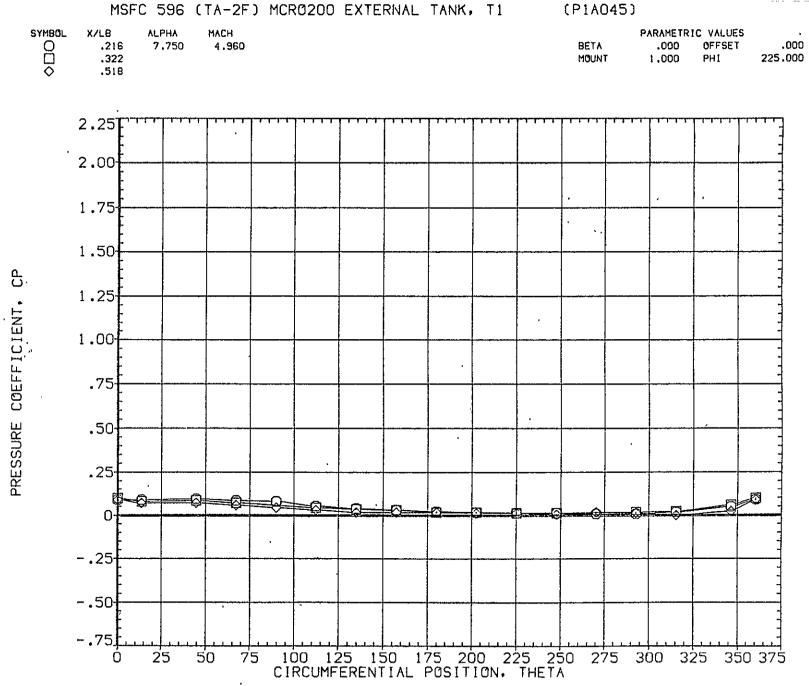


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1898

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A045) **ALPHA** PARAMETRIC VALUES SYMBOL X/LB MACH 000 .000 .610 7,750 4.960 BETA .000 OFFSET 1.000 PHI 225.000 .735 MOUNT .860 2.25] 2.00 1.75 1.50 1.25 COEFFICIENT, 1.00 .75 PRESSURE .50 .25 -.25 -.50 -.75 50 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

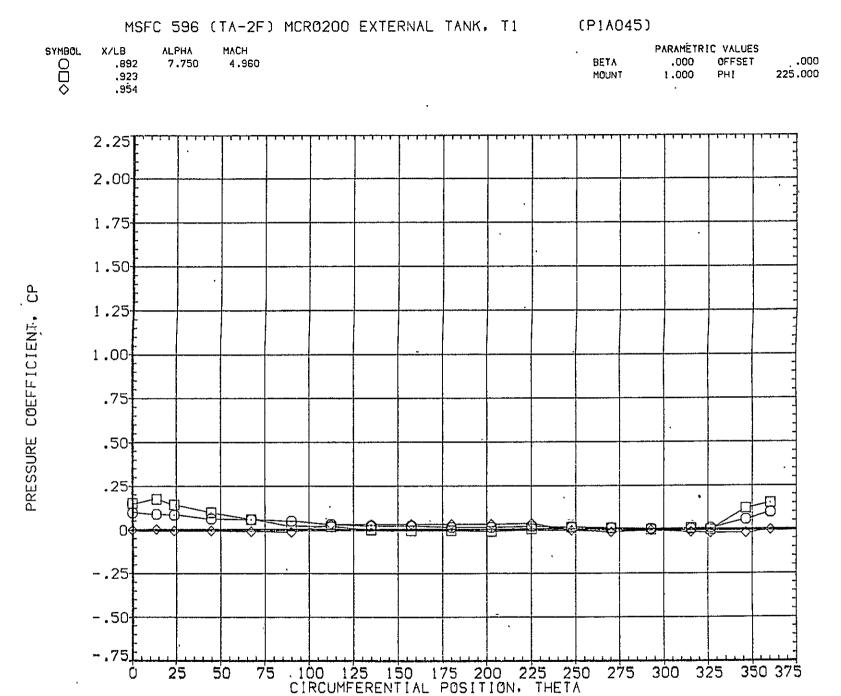


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

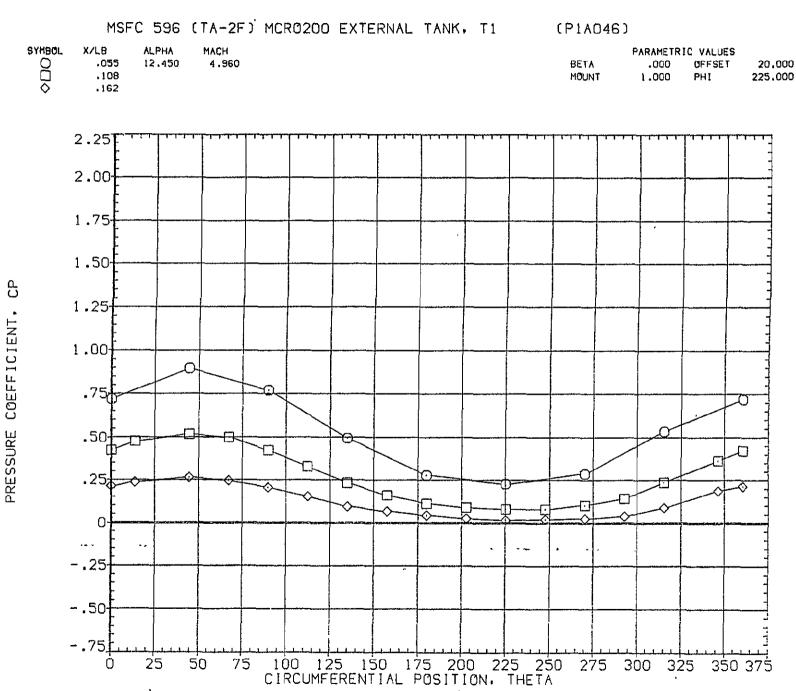


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES.

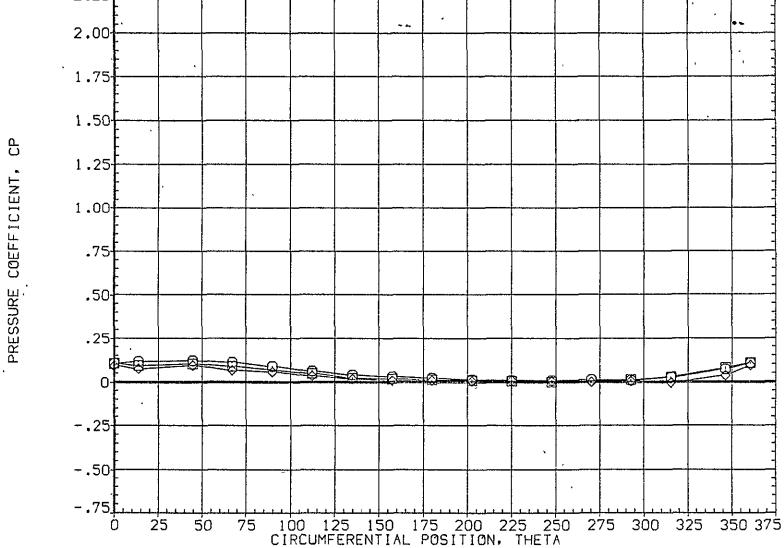


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1902

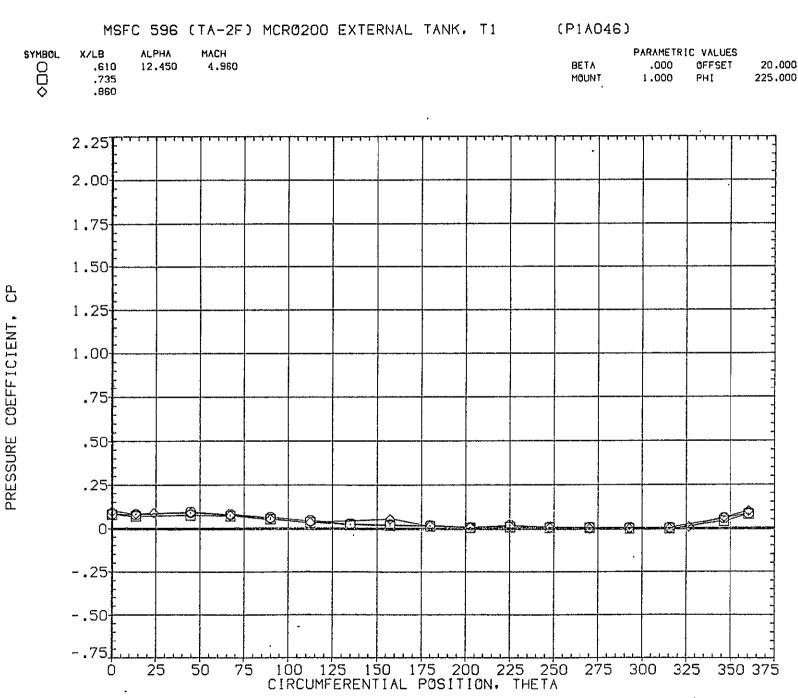


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

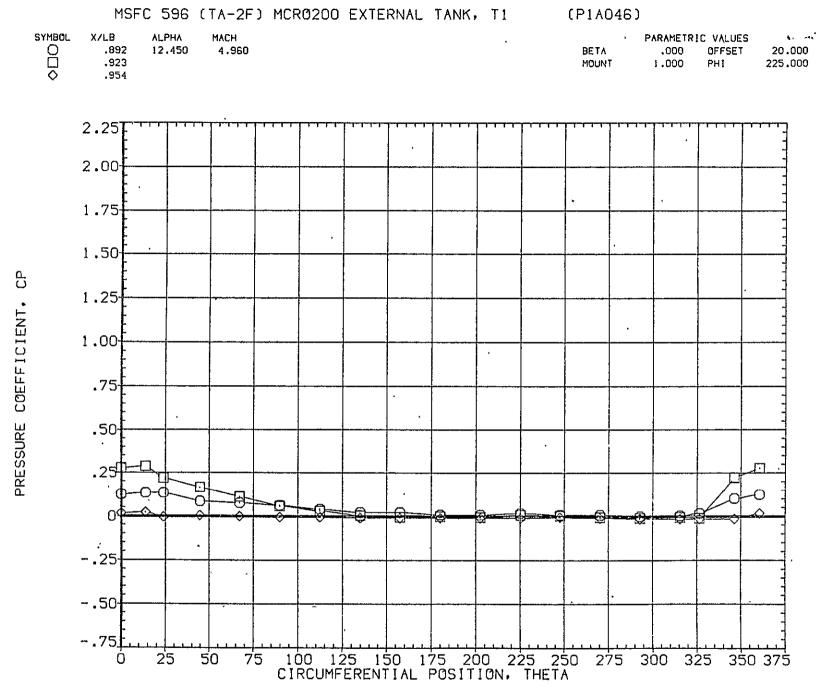


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1904

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A047)

SYMBOL	X/LB	ALPHA	MACH		PARAMETRIC VALUES		
0	.055	16.450	4.960	BETA	.000	OFFSET	20.000
	.108			MOUNT	1.000	PHI	225,000
^ ·	162						

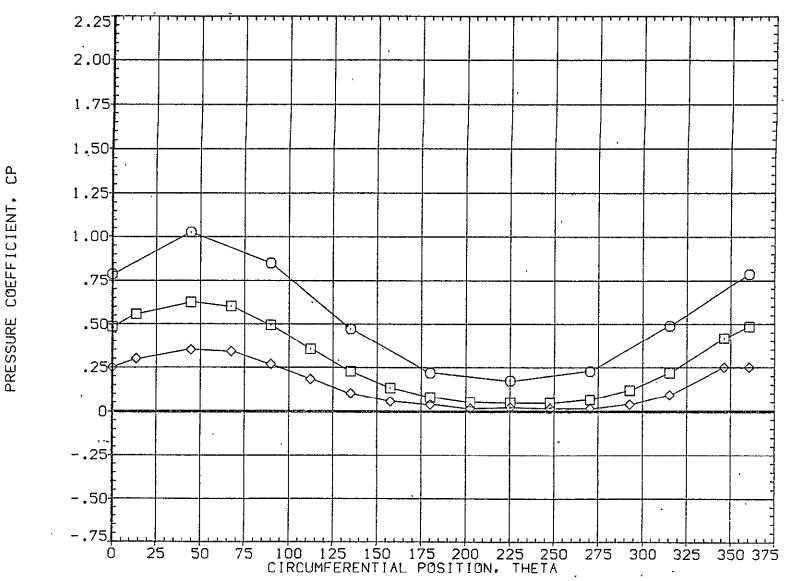


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE . 1905

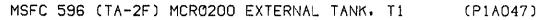
FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1906

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

~ .50

-.75]



SYMBOL	X/LB	ALPHA	MACH	PA	PARAMETRIC VALUES			
2	.610	16.450	4.960	BETA	.000	OFFSET	20.000	
	.735			MOUNT 1	.000	PHI	225.000	
Δ.	.860							

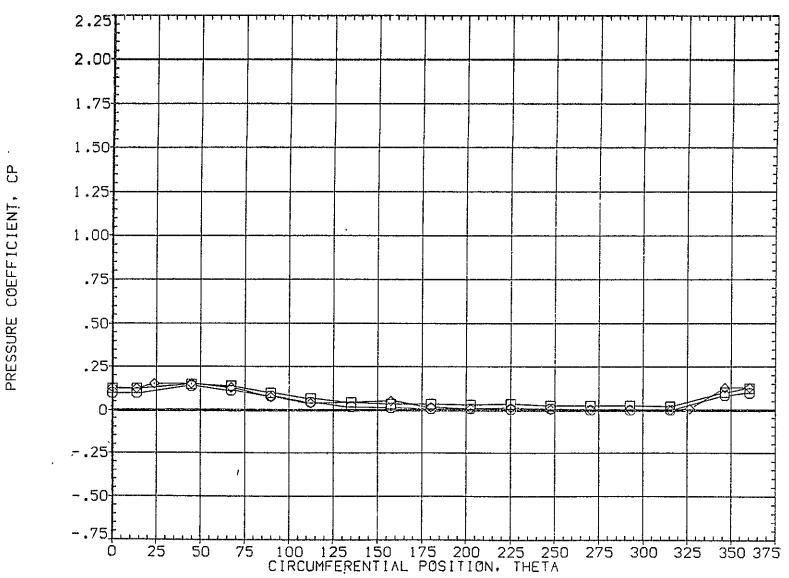


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1907

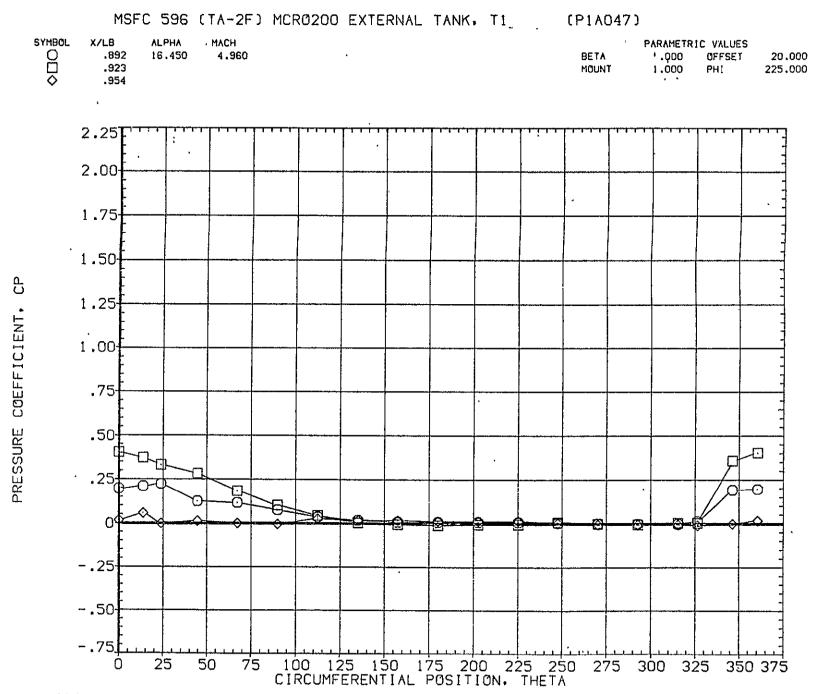


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1908

20,000

225.000

OFFSET

PHI

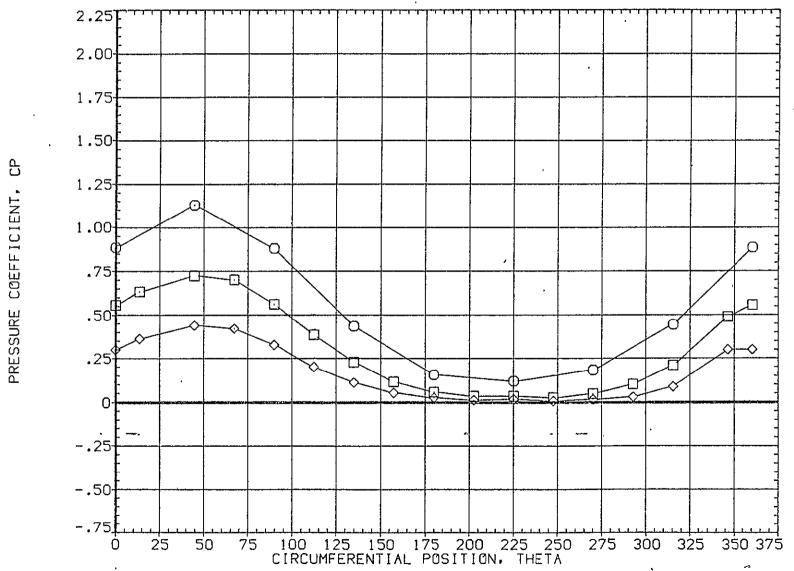


FIG. 5. CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1909

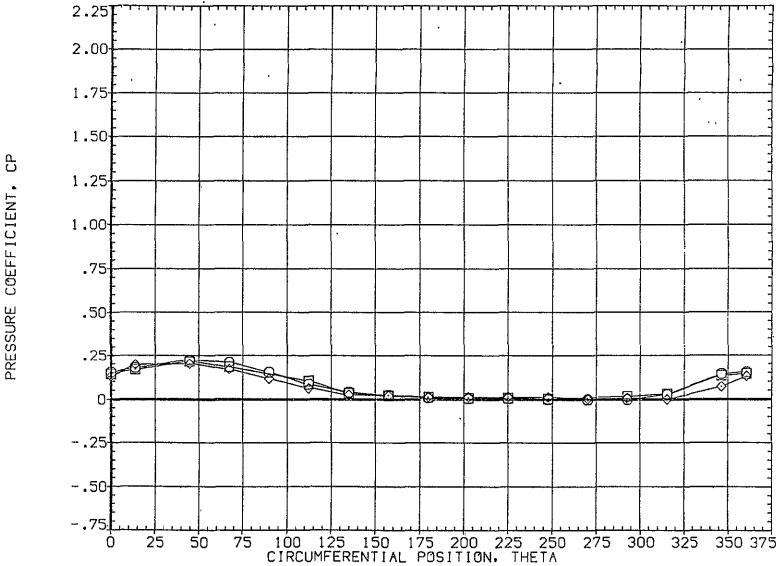


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1910

MSFC 598	(TA-2F)	MCR0200	EXTERNAL	TANK,	T 1	(P1A048)
_						

SYMBOL	X/LB		MACH		PARAMETRIC VALUES			
0	.610	20.490	4.960	BETA	.000	OFFSET	20.000	
	.735			MOUNT	1,000	PHI	225,000	
\Diamond	.860							

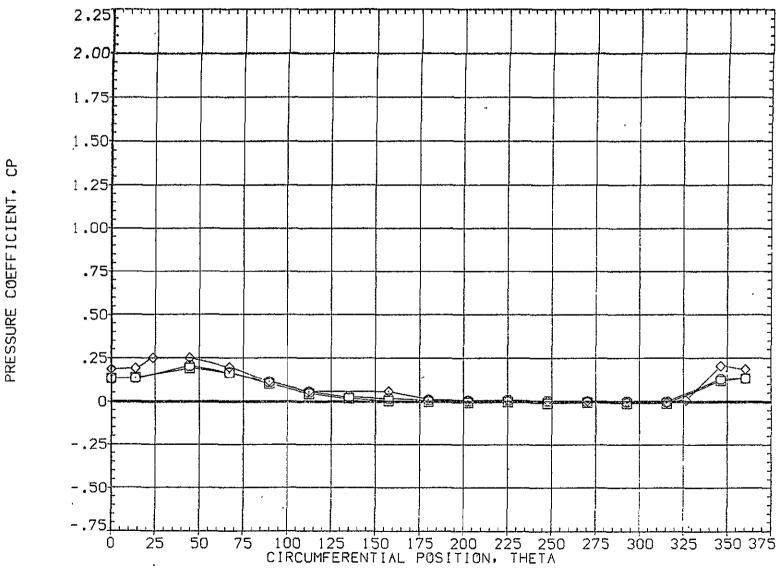


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1911

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1912

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.25

-.50

-.75

25

50

75

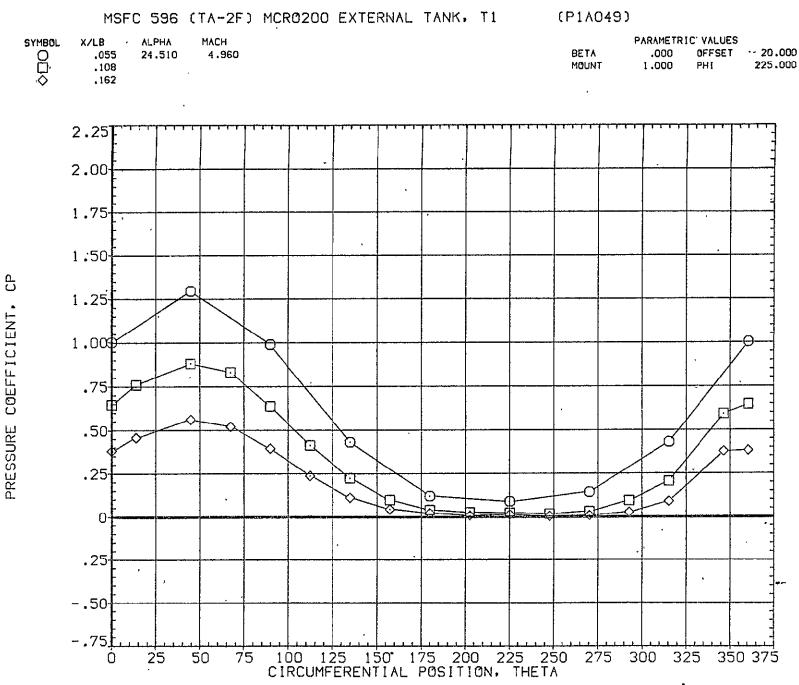
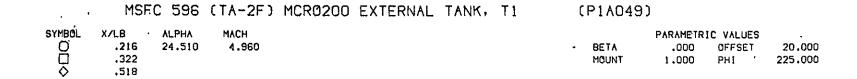


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES



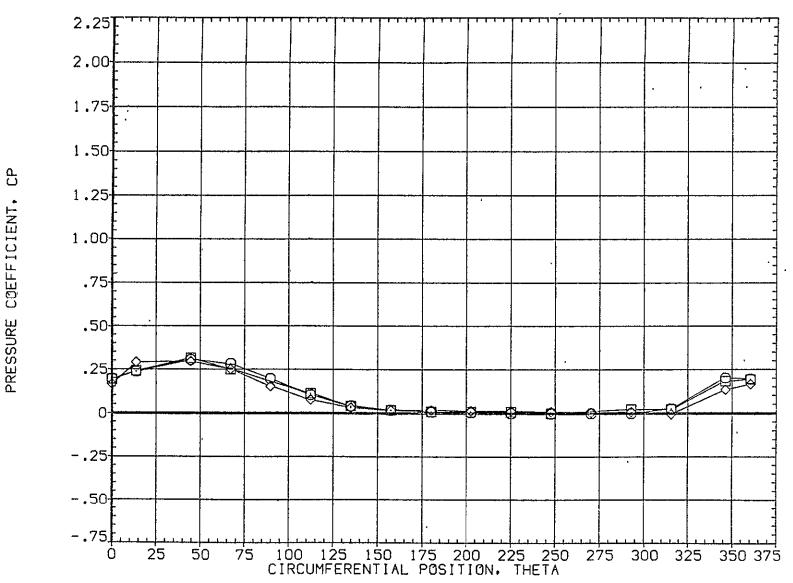


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1914

MSFC 596 (TA-2F) MCRØ200 EXTERNAL TANK, T1 (P1A049)

B ALPHA MACH PARAMETRIC VAL

PARAMETRIC VALUES SYMBOL X/LB OFFSET 20.000 000 24.510 4,960 BETA .000 .610 225,000 TAUON 1.000 PHI .735 .860

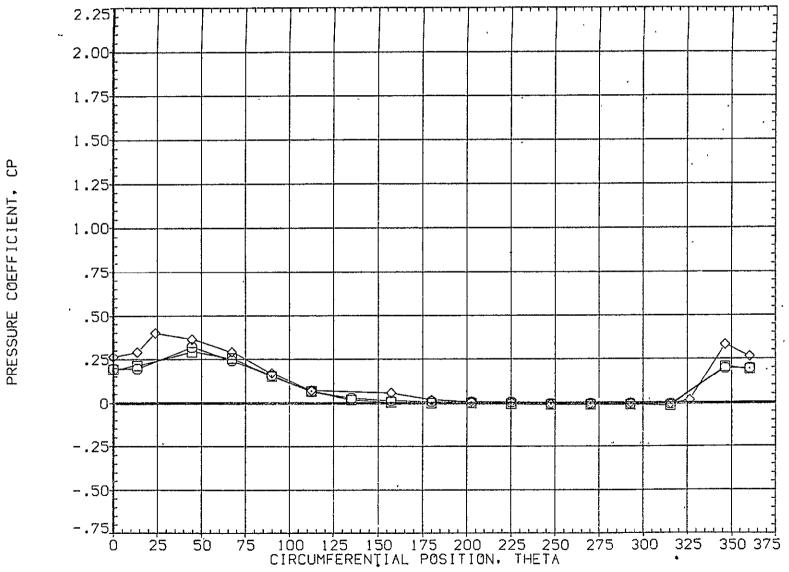


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

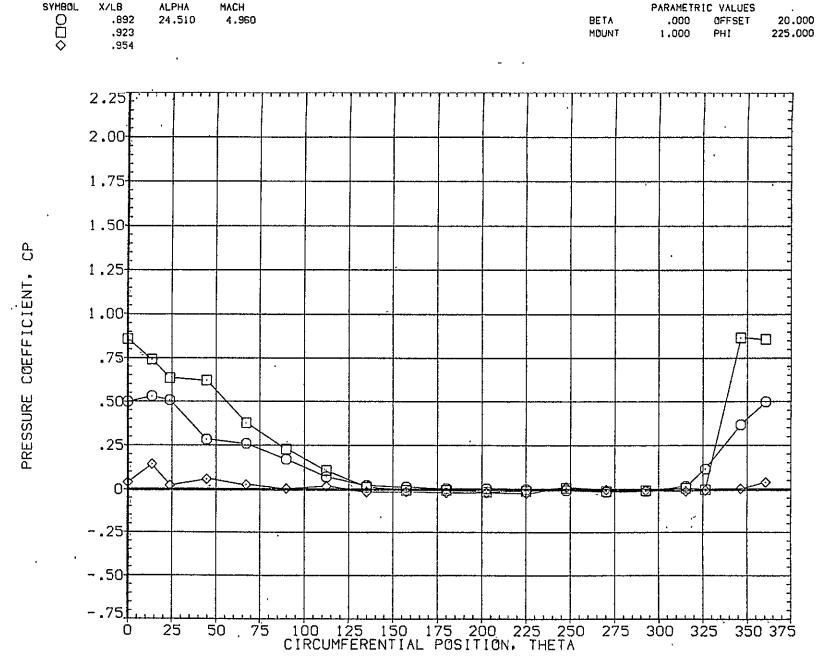


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1916

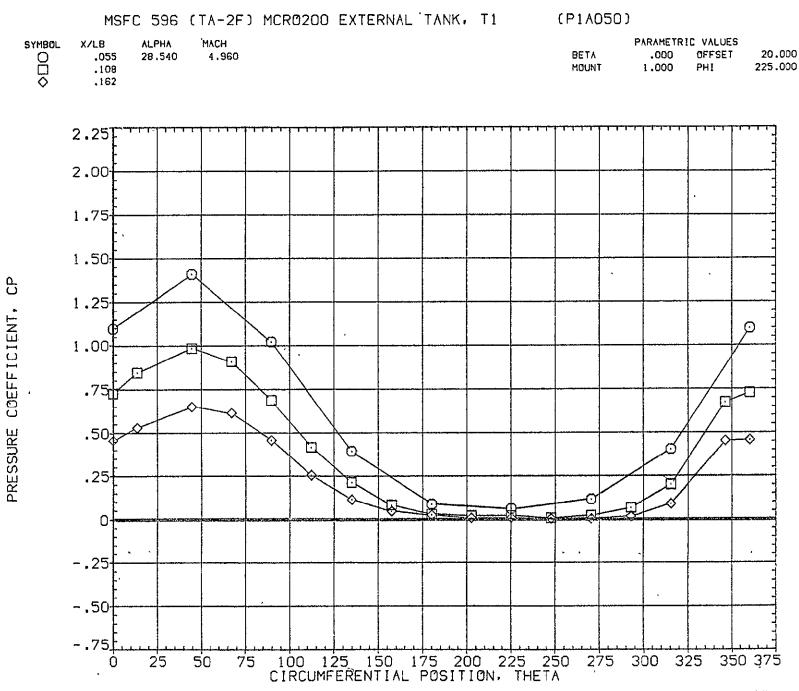


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1917

SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUÉS

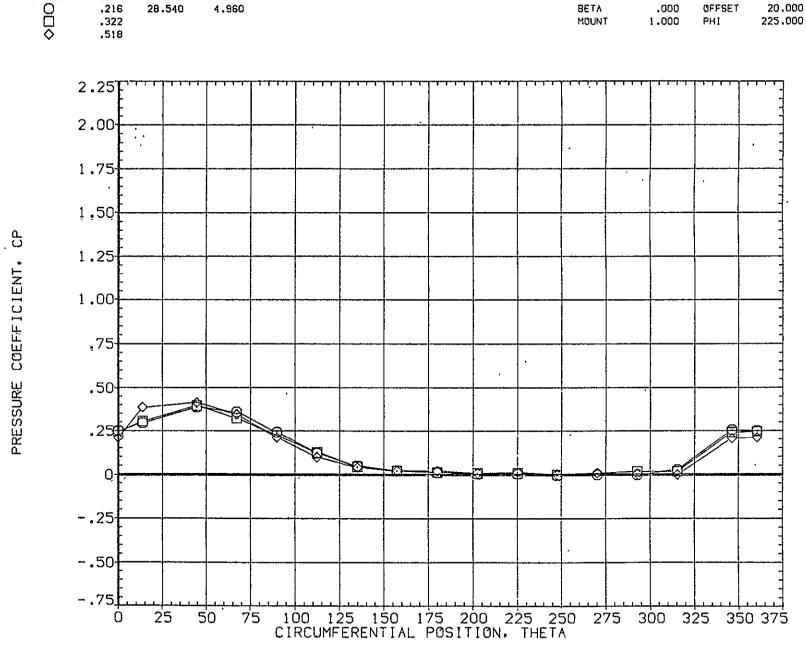


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1918

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A050) PARAMETRIC VALUES SYMBOL X/LB **ALPHA** MACH .000 OFFSET 20.000 000 BETA .610 28,540 4.960 MOUNT 1.000 PHI 225.000 .735 .860 2.25 2.00 1.75 1,.50 G G 1.25 COEFFICIENT. 1.00 .75 PRESSURE .50 0 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 50 75 CIRCUMFERENTIAL POSITION, THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1919

SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUES

20.000

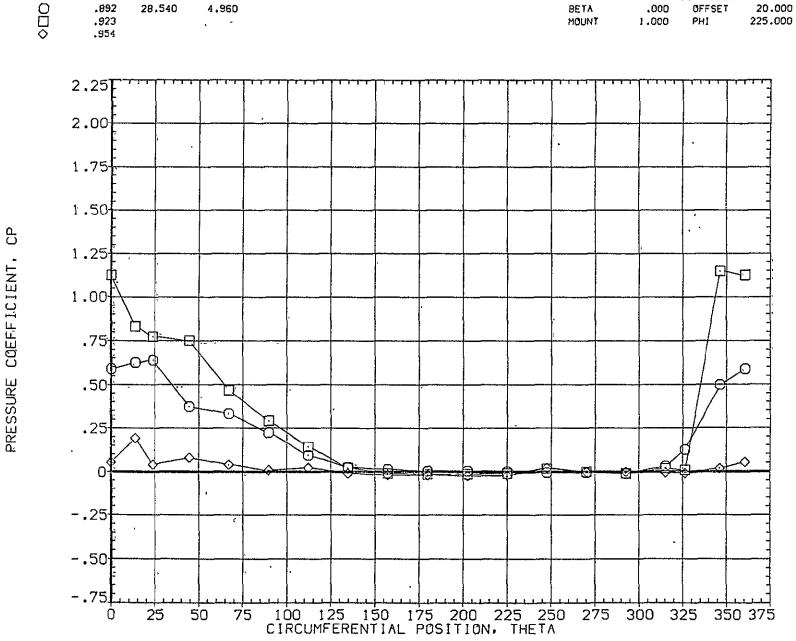


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1920

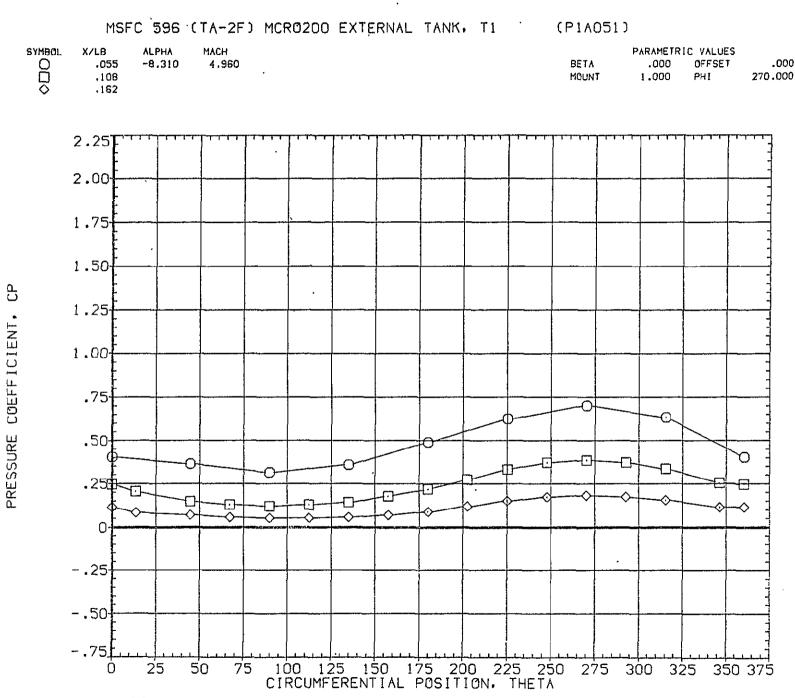


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A051)

6-5



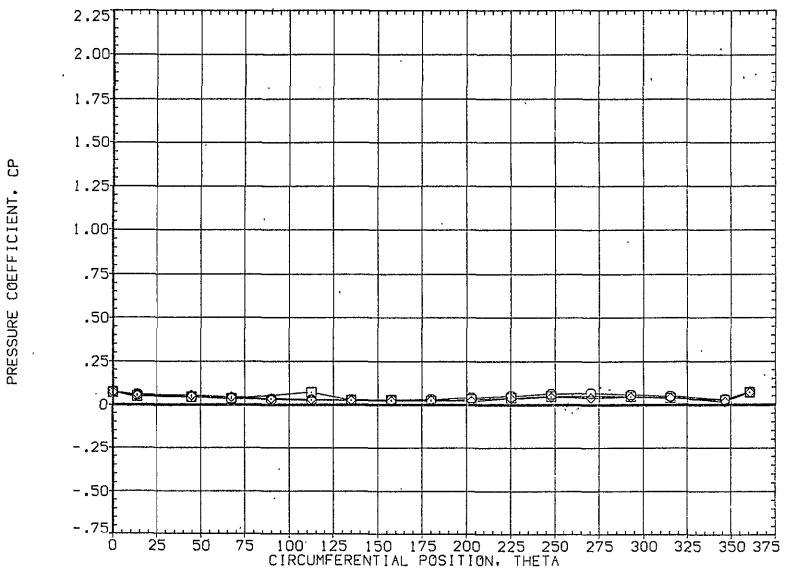


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1922

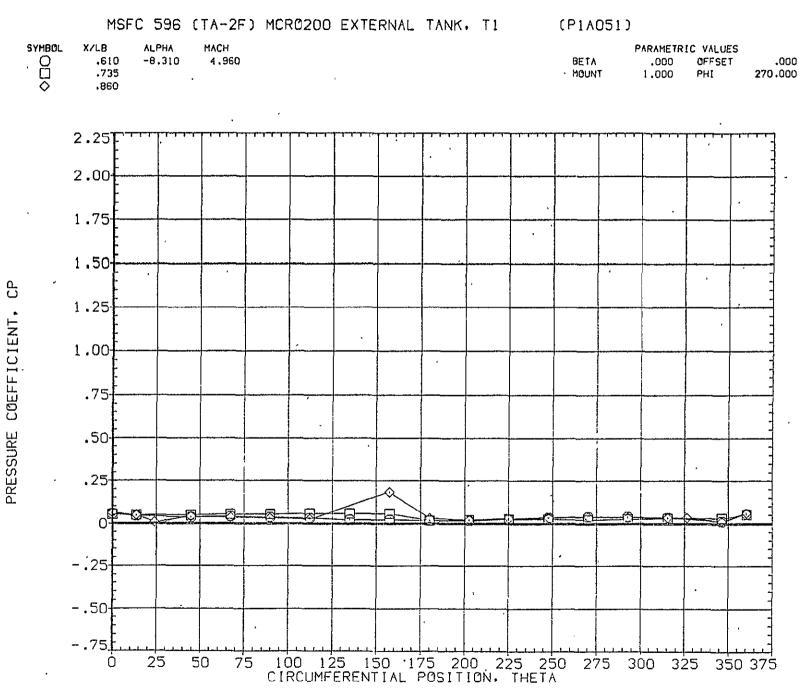


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

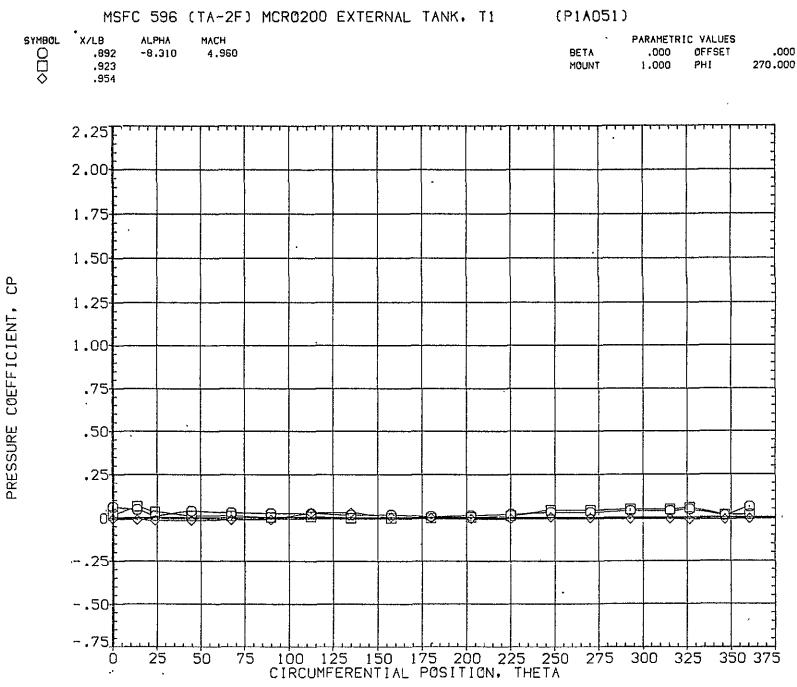


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1924

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1925

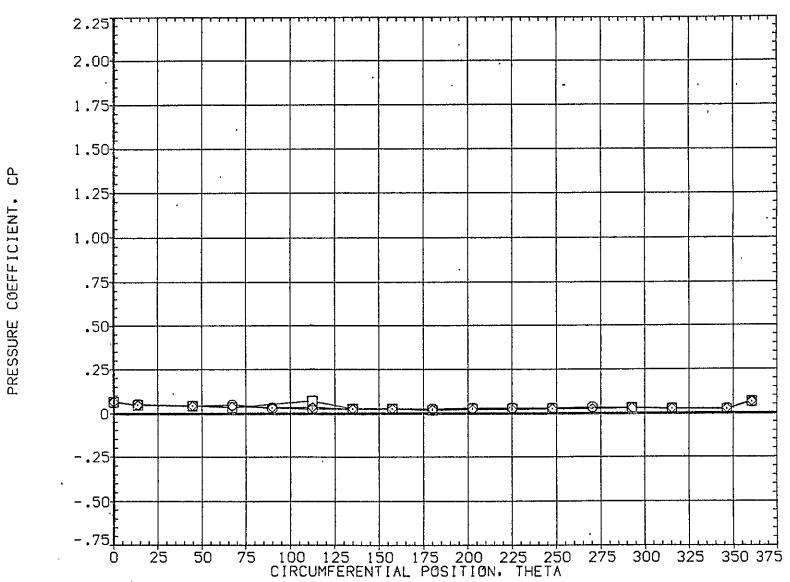


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1926



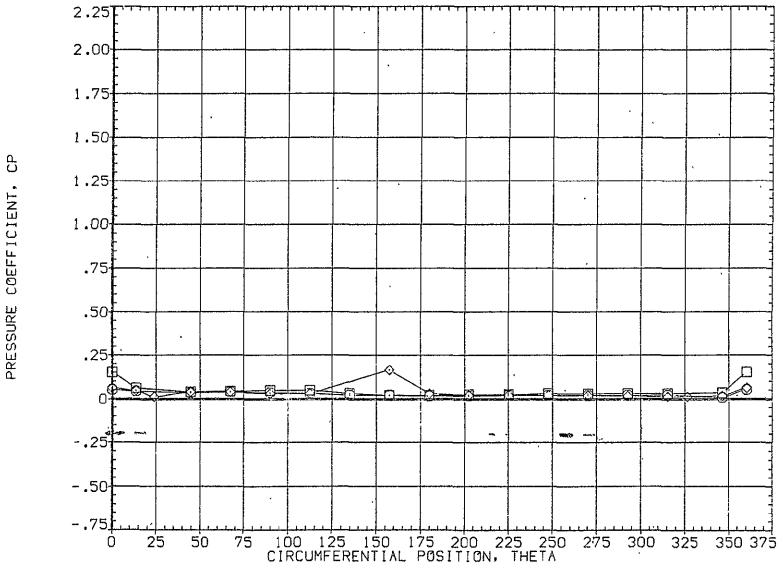


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

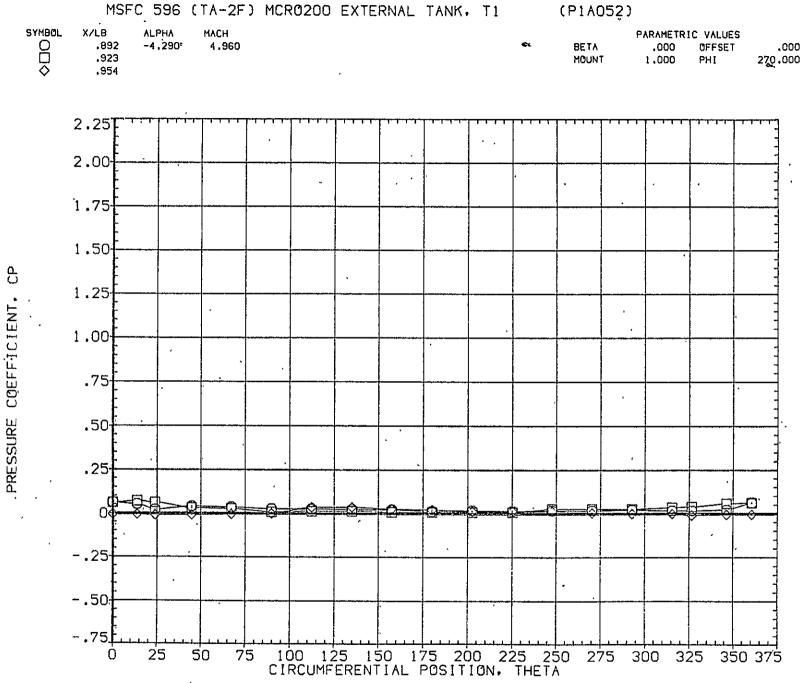


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1928

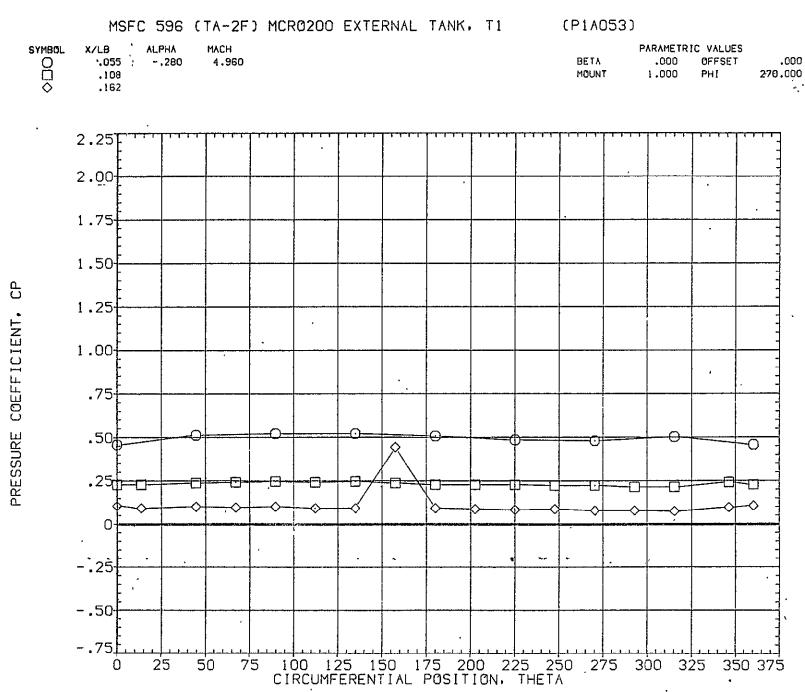


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1929

SYMBOL

X/LB

.216

ALPHA

-.280

MACH

4.960

(P1A053)

BETA

PARAMETRIC VALUES

OFFSET

.000

.000

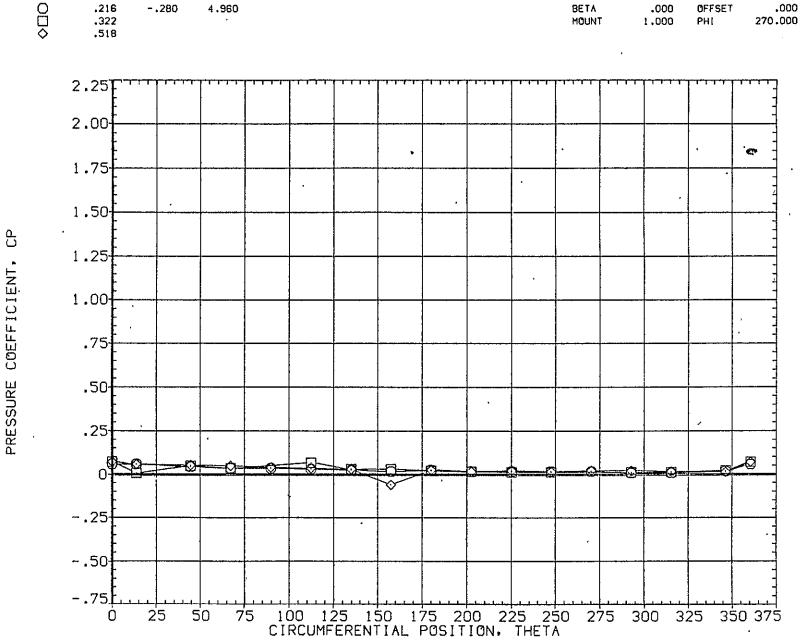


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES. PAGE 1930

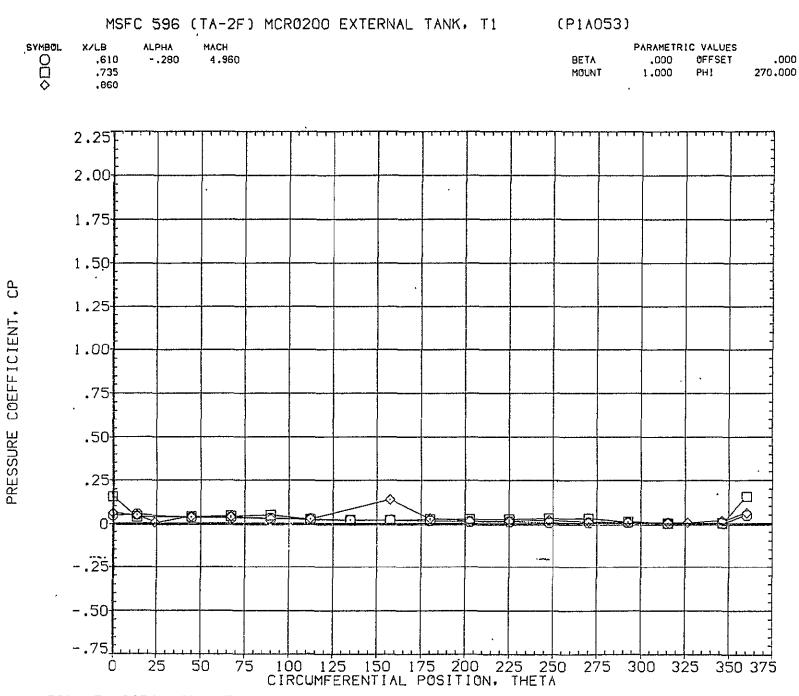


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1931

.954

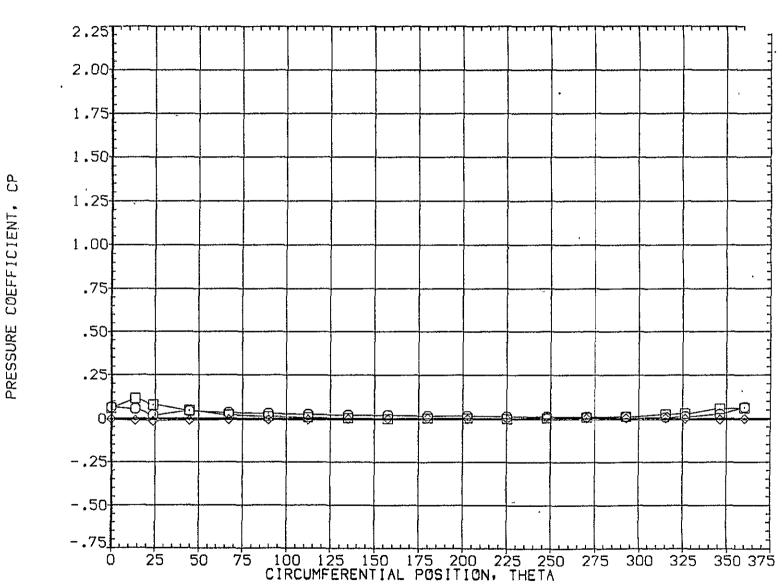


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1932

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

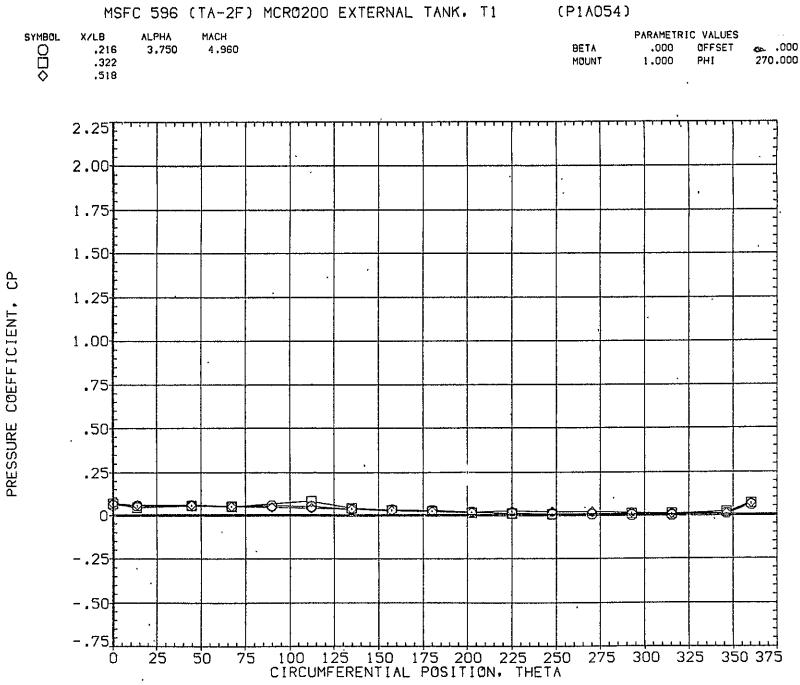


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1934

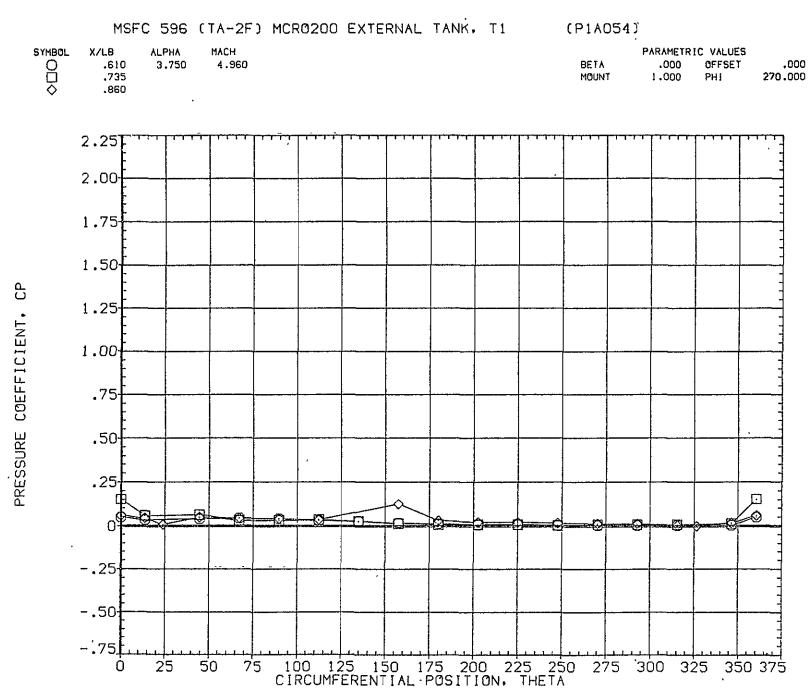


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1935

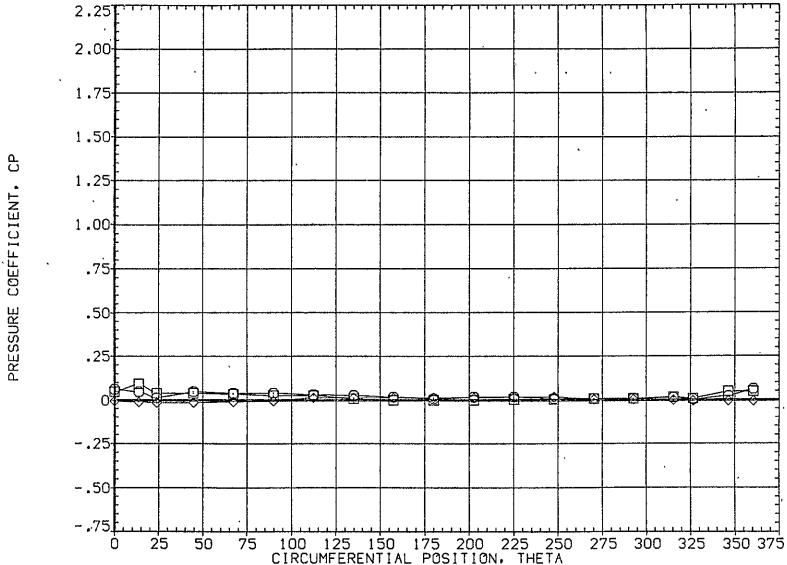


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1936

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1937

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

-.75

,518

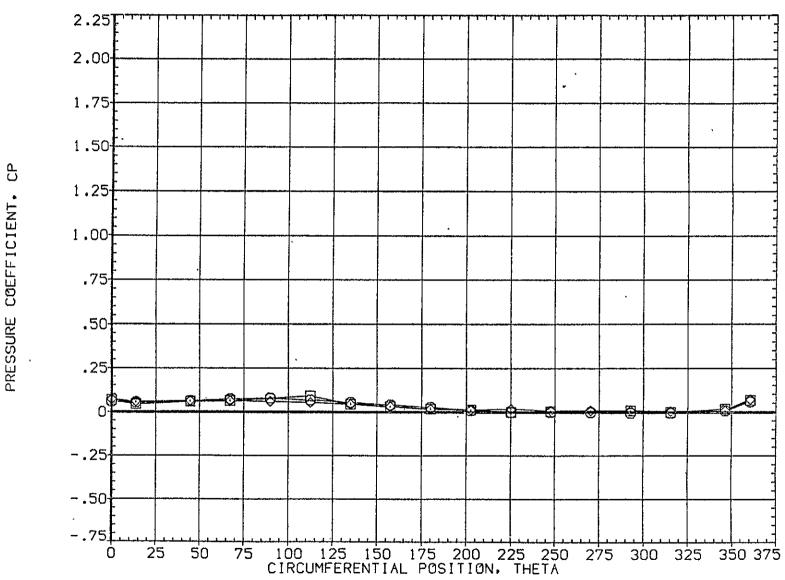


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1938

MSFC 596 (TA-2F) MCR0200 EXTERNAL TANK, T1 (P1A055) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUÉS 000 7.750 4,960 .000 OFFSET .000 .610 BETA 1.000 PHI 270.000 .735 MOUNT .860 2.25 2.00 1.75 1.50 1.25 PRESSURE COEFFICIENT, 1.00 .75 .50 .25 -.25 -.50 -.75 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

CIRCUMFERENTIAL POSITION, THETA

S

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1940

FIG. 5. CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1941

X/L8

.216

ALPHA

12.450

MACH

4.960

BETA

PARAMETRIC VALUES

.000

OFFSET

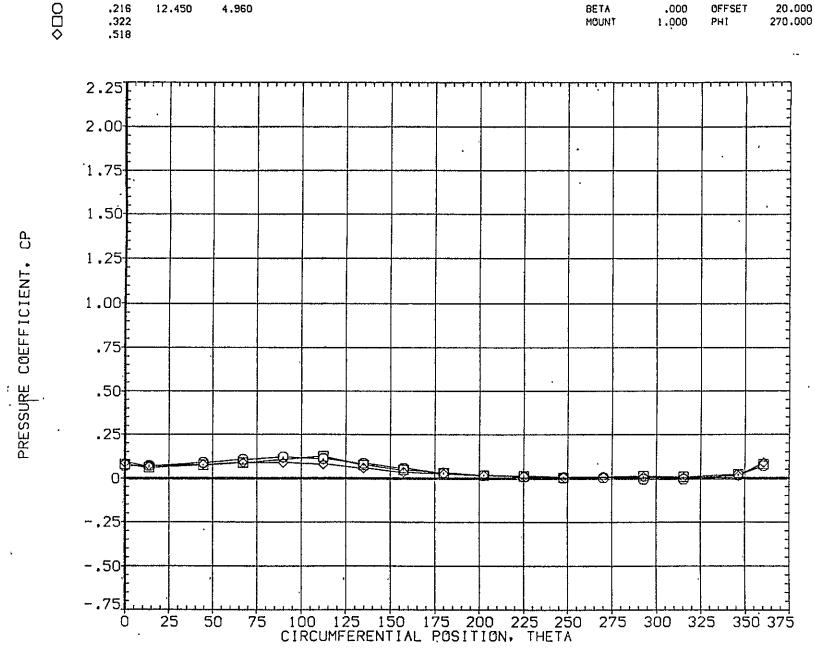


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1942

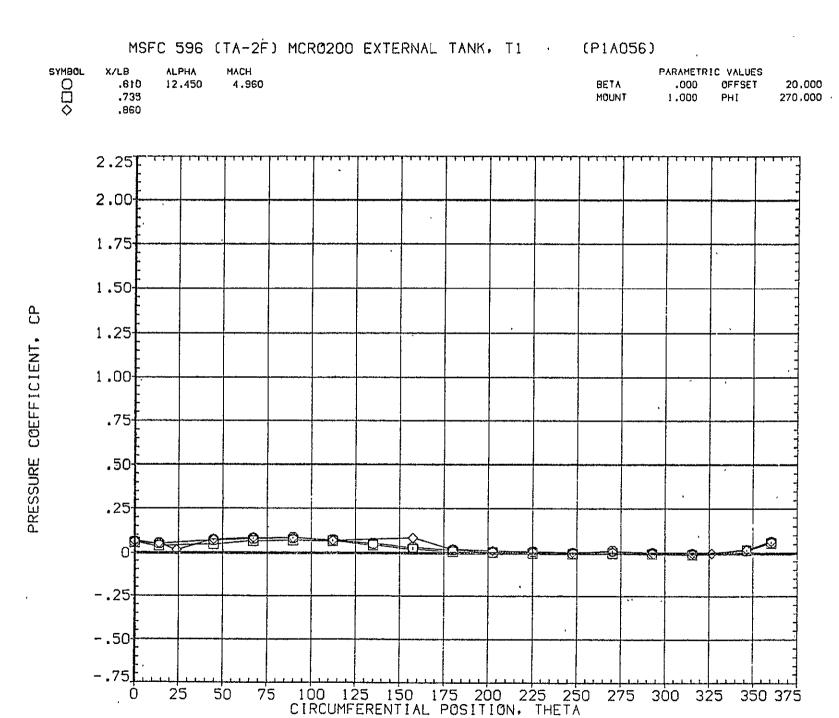


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1943

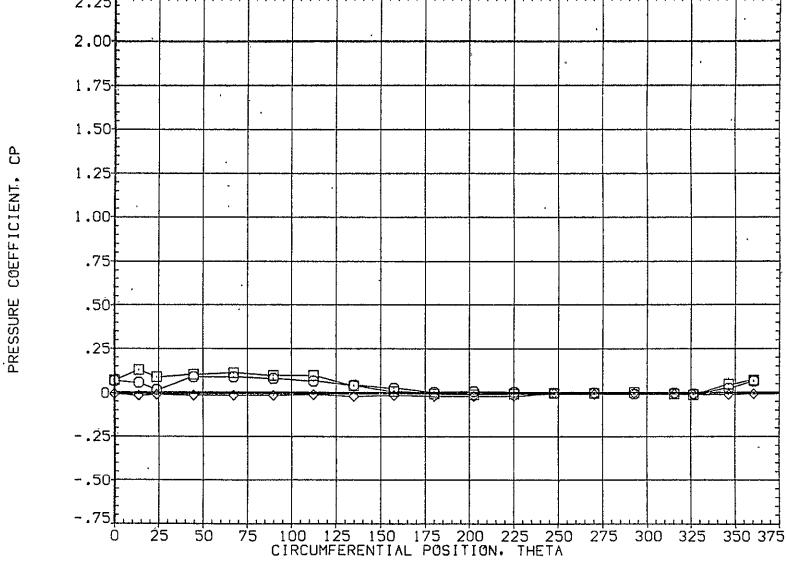


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1944

SYMBOL X/LB . **ALPHA** MACH -PARAMETRIC VALUES 0□\$.055 16.450 4.960 .000 OFFSET 20,000 BETA .108 MOUNT 1.000 PHI 270.000 .162 2.25 2.00 1.75 1.50 Э 1.25 PRESSURE COÉFFICIENT, 1.00-.75 .504 0 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1945

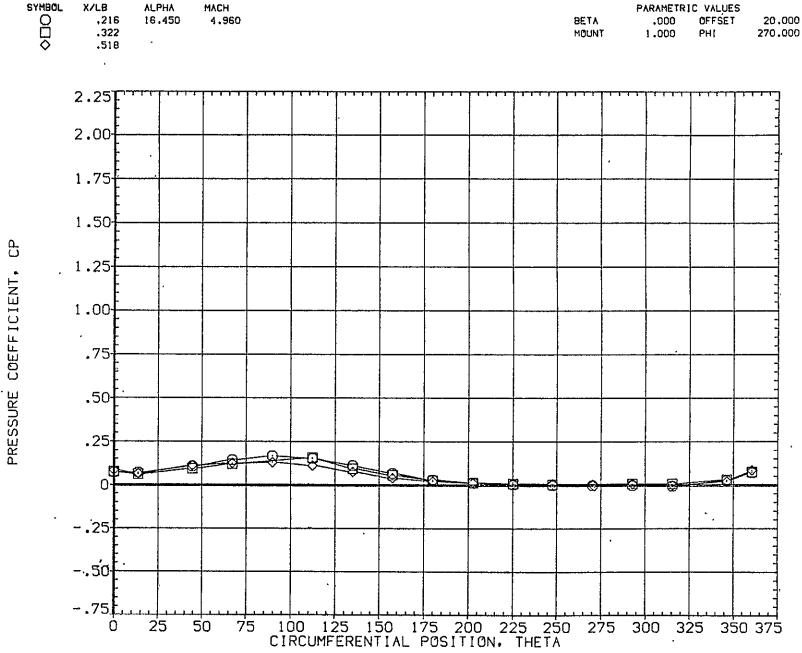


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1946

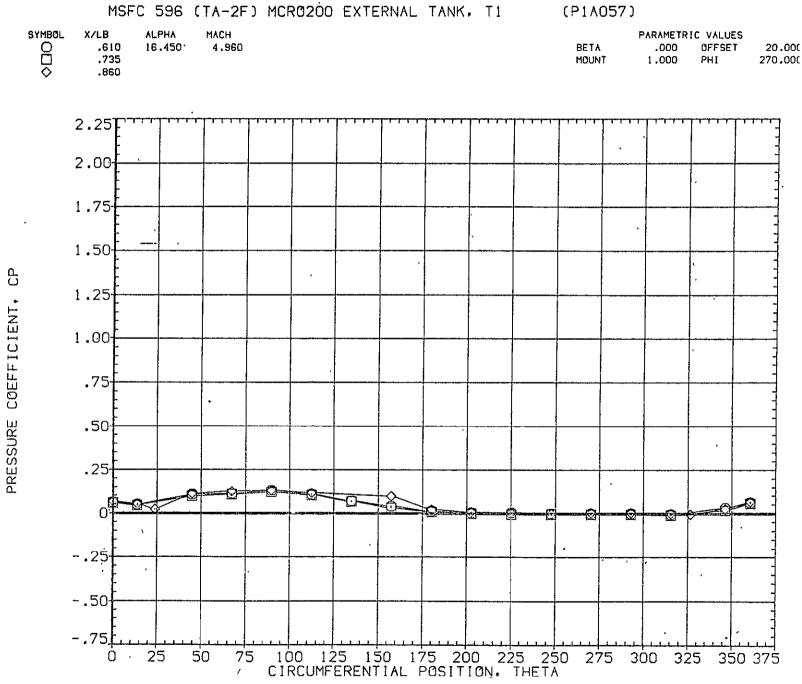


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1947

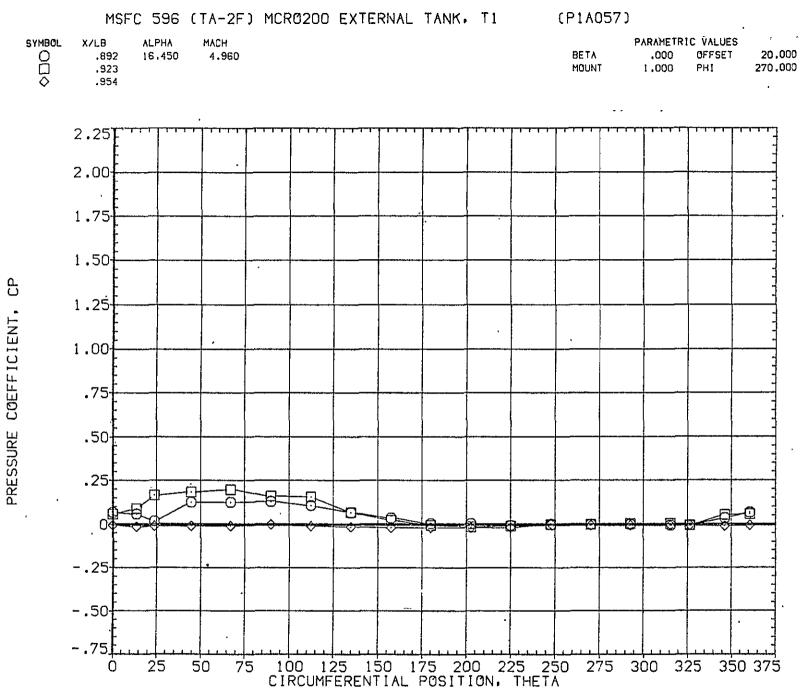


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1948

IG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1949

X/LB

.216

ALPHA

20.490

MACH

4.960

BETA

PARAMETRIC VALUES

.000 OFFSET

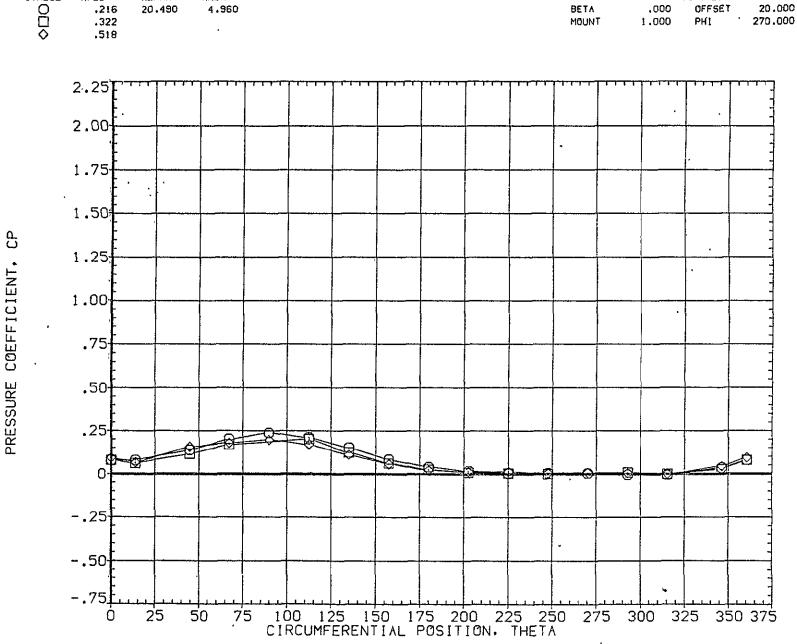
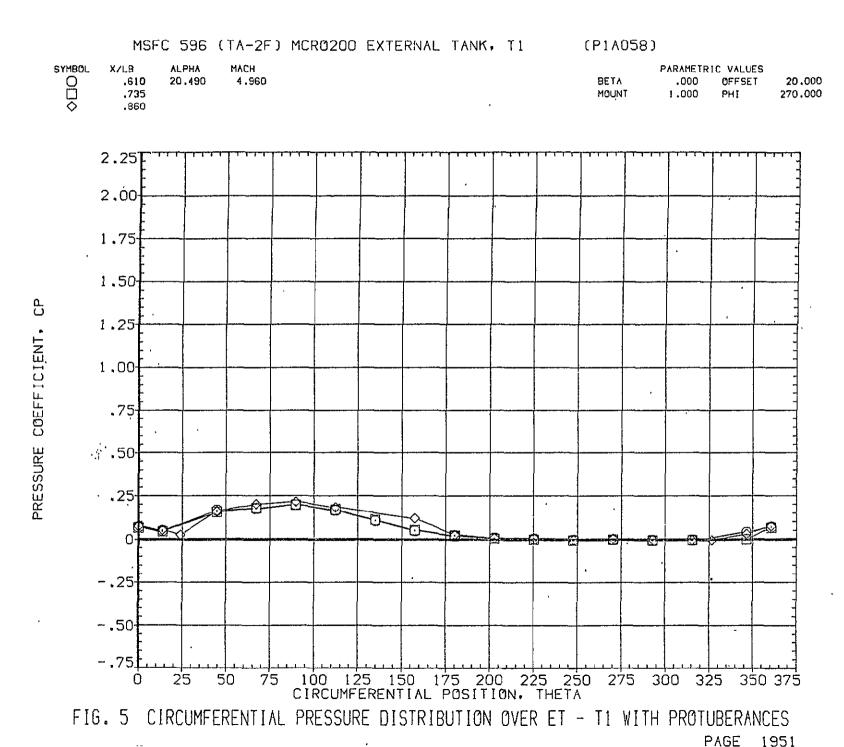


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1950



X/LB

ALPHA

MACH

PARAMETRIC VALUES

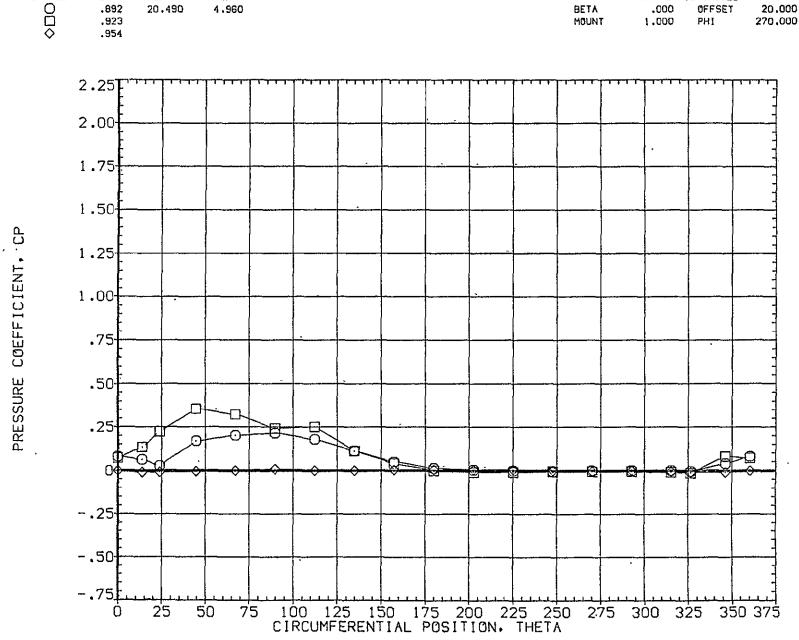


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES · PAGE 1952

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1953



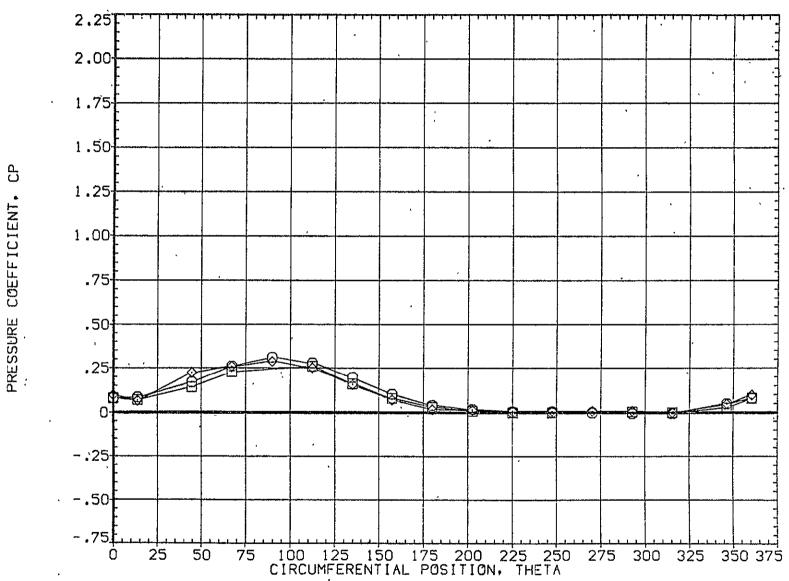


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1954

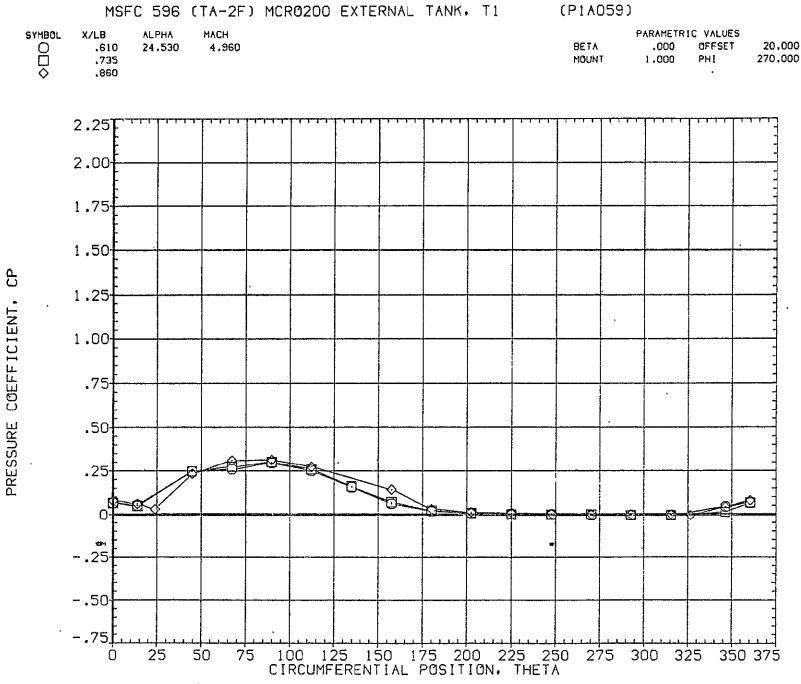


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1955

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1956

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

50

20.000

270.000

000

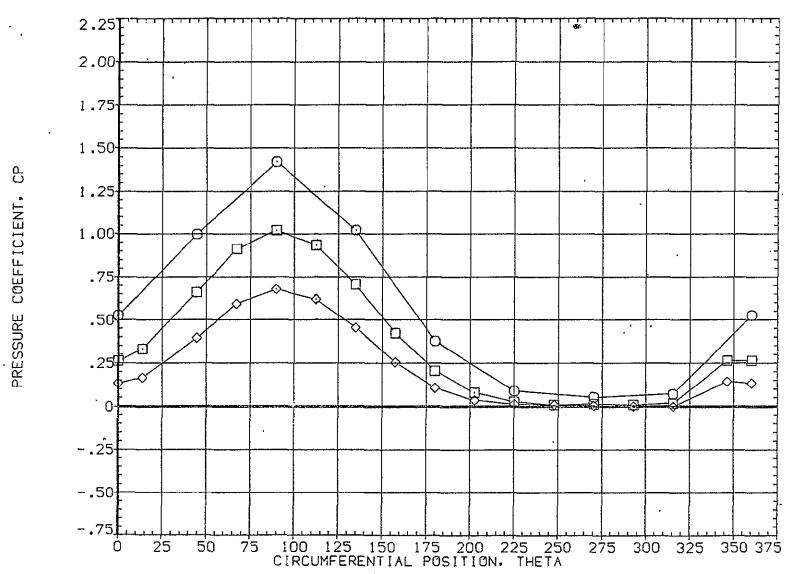


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1957



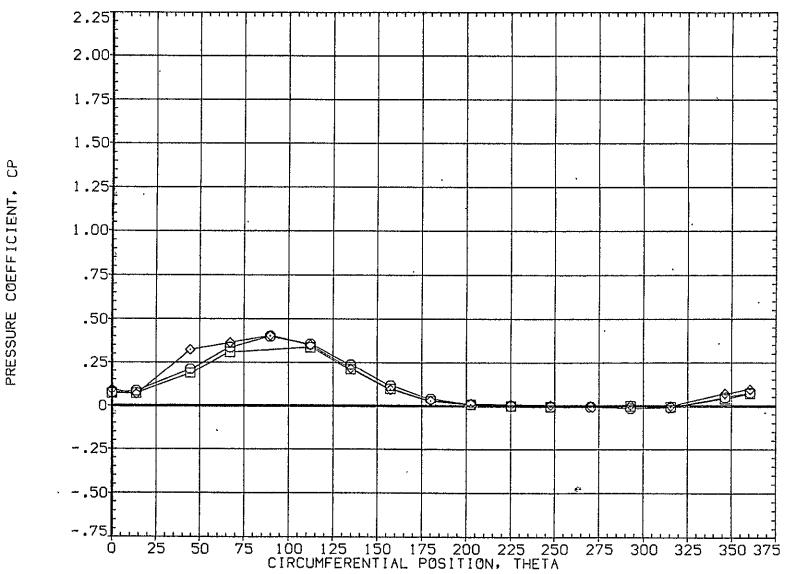


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1958

SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 .610 28.540 4.960 BETA .000 OFFSET 20.000 .735 MOUNT 1.000 PHI 270.000 .860

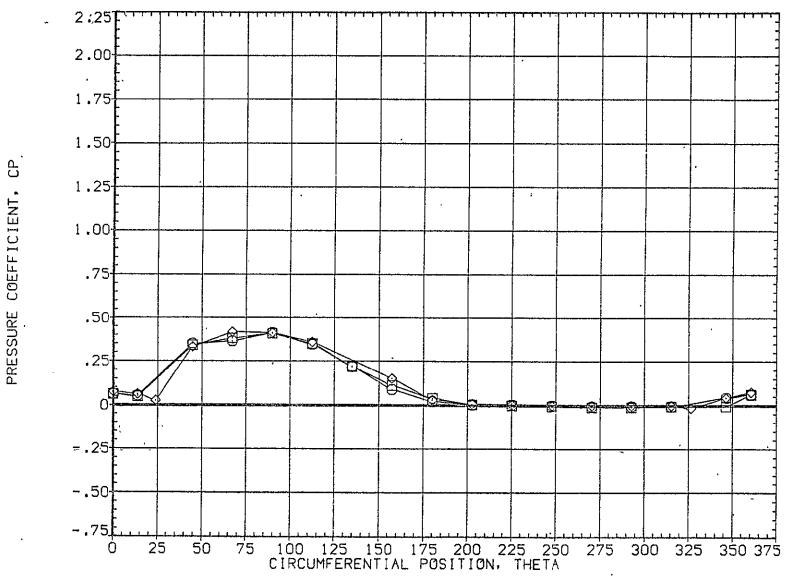


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1959

(P1A060)

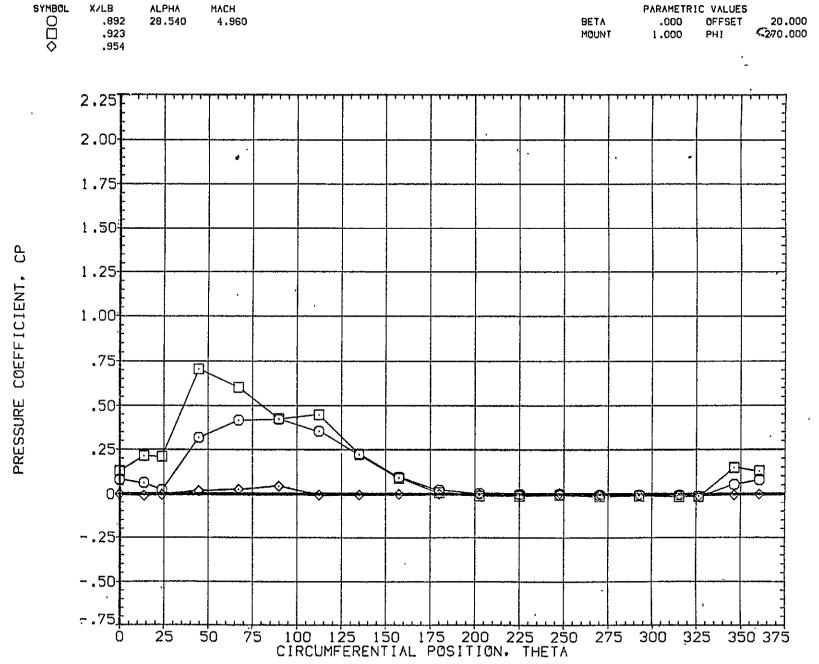


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1960

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SYMBOL	X/LB	ALPHA	MACH	PARAMETR	PARAMETRIC VALUES		
0	.055	-8.310	4.960	BETA .000	OFFSET	.000	
	.108			MOUNT 1.000	1H9	315.000	
0	.162						

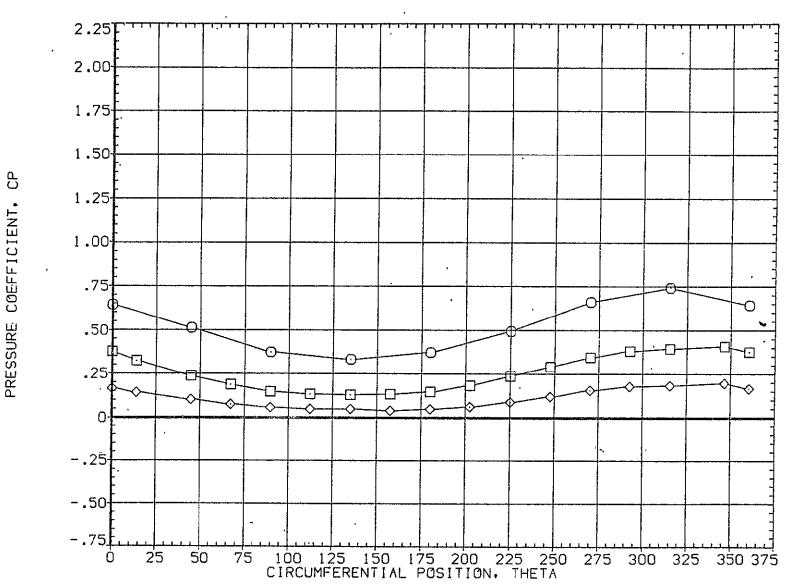


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1961

-.25

-.50

-.75

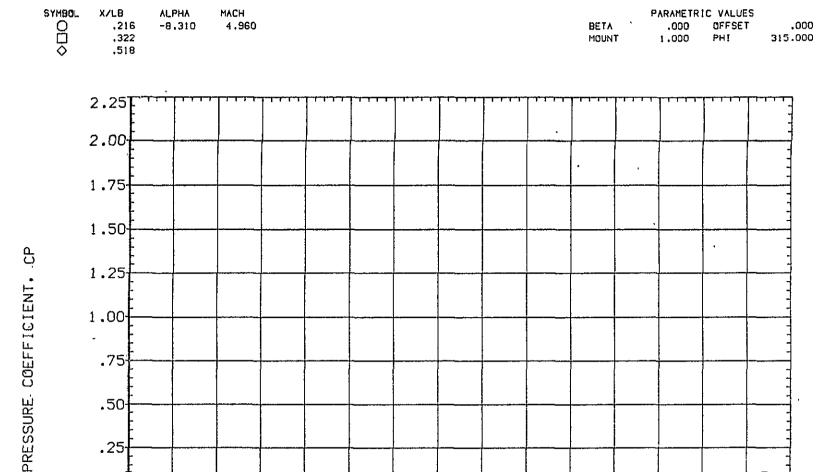


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1962

CIRCUMFERENTIAL POSITION, THETA

100 125 150 175 200 225 250 275 300 325 350 375

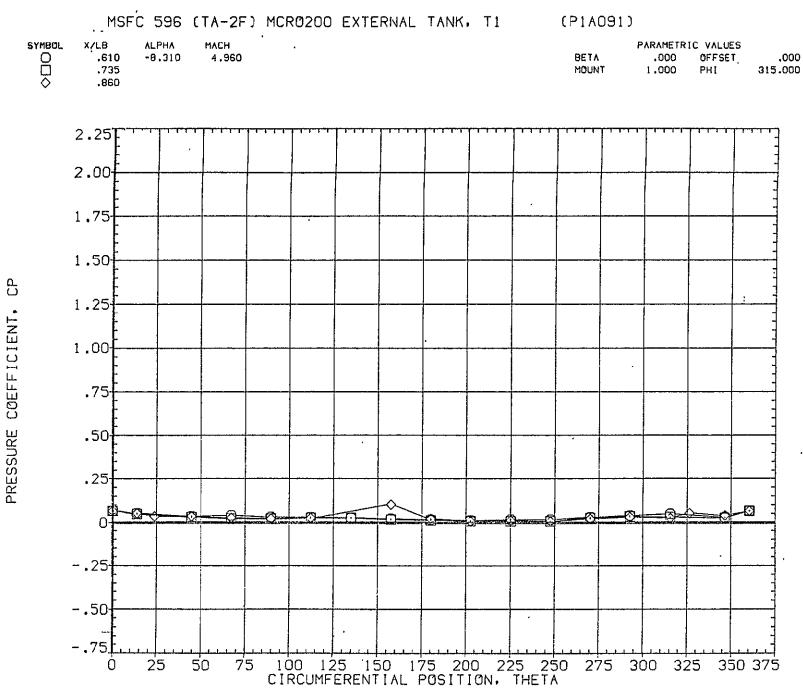


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1963

(P1A091)

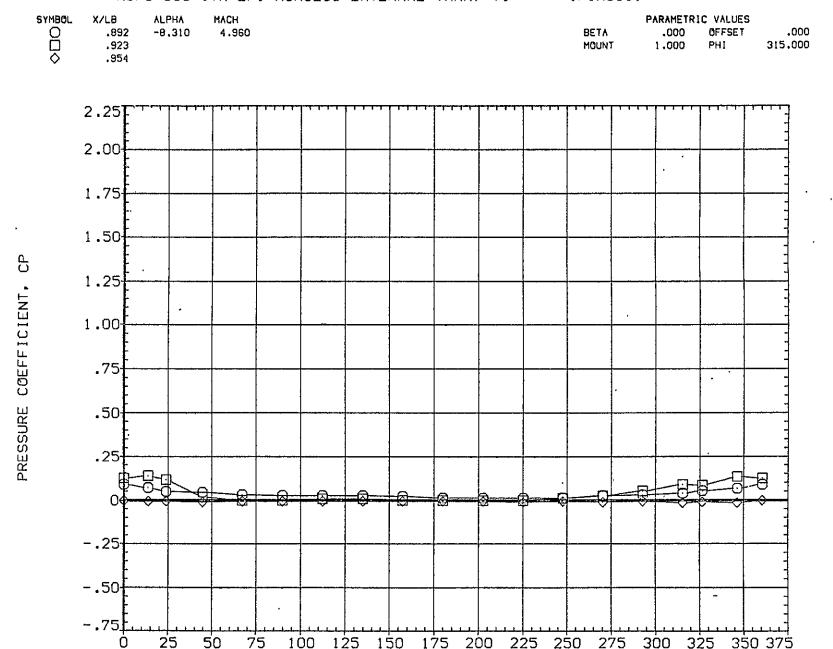


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1964

CIRCUMFERENTIAL POSITION. THETA

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1965

X/LB

.216

ALPHA

-4.290

MACH

4.960

BETA

PARAMETRIC VALUES

OFFSET

.000

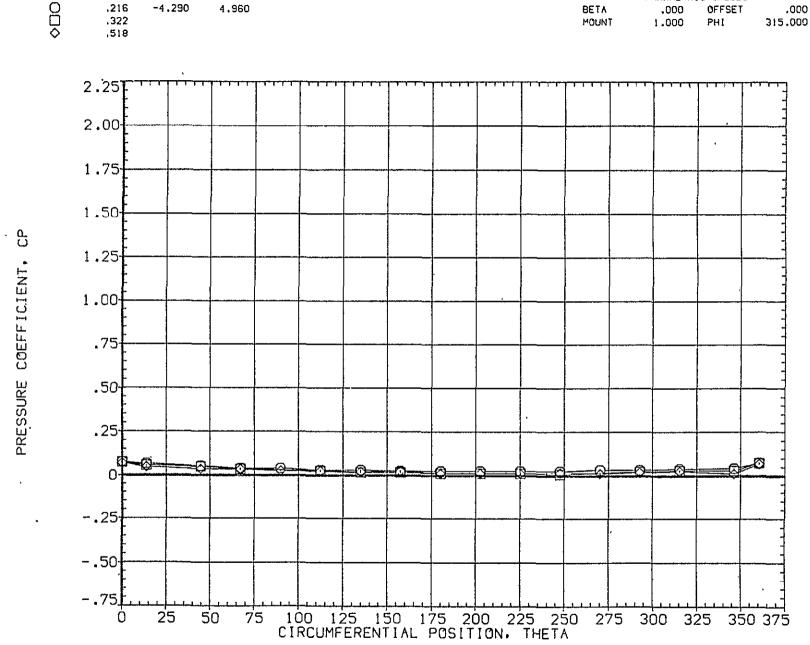


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1966

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A092) X/LB **ALPHA** MACH PARAMETRIC VALUES .610 -4.290 4.960 BETA .000

OFFSET

PHI

1.000

MOUNT

.000 315.000

SYMBOL

000

.735

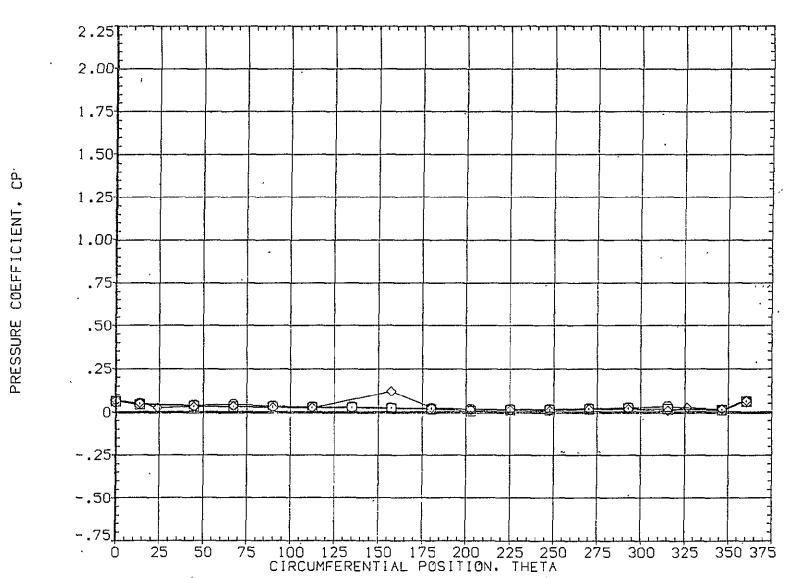


FIG. 5 CIRCUMFÉRENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1967

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1968

CIRCUMFERENTIAL POSITION. THETA

100 125 150 175 200 225 250 275 300 325 350 375

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1 (P1A093) SYMBOL X/LB **ALPHA** MACH PARAMETRIC VALUES 000 4.960 -.280 .055 BETA .000 OFFSET .000 .108 MOUNT 1,000 PHI 315,000 .162 2.25 2.00 1.75 1.50 9 1.25 COEFFICIENT, 1.00 .75 PRESSURE .504 -.25 -.50 -.75 100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA 50 75 25

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES,



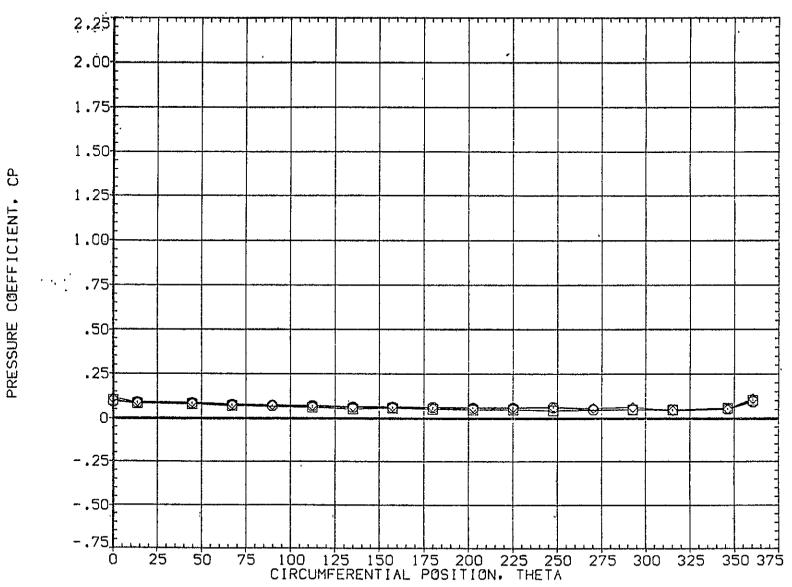


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PRÓTUBERANCES PAGE 1970

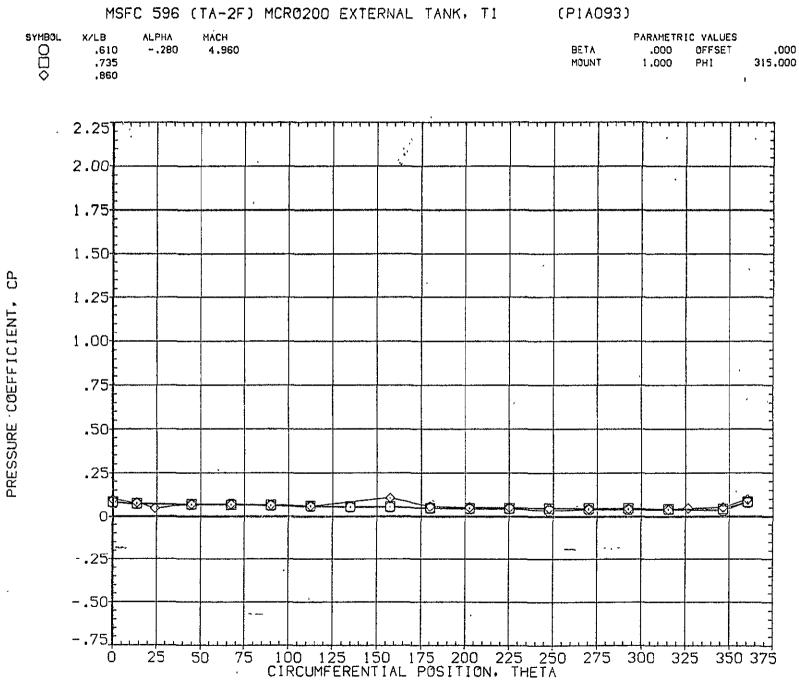


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1971

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION. THETA

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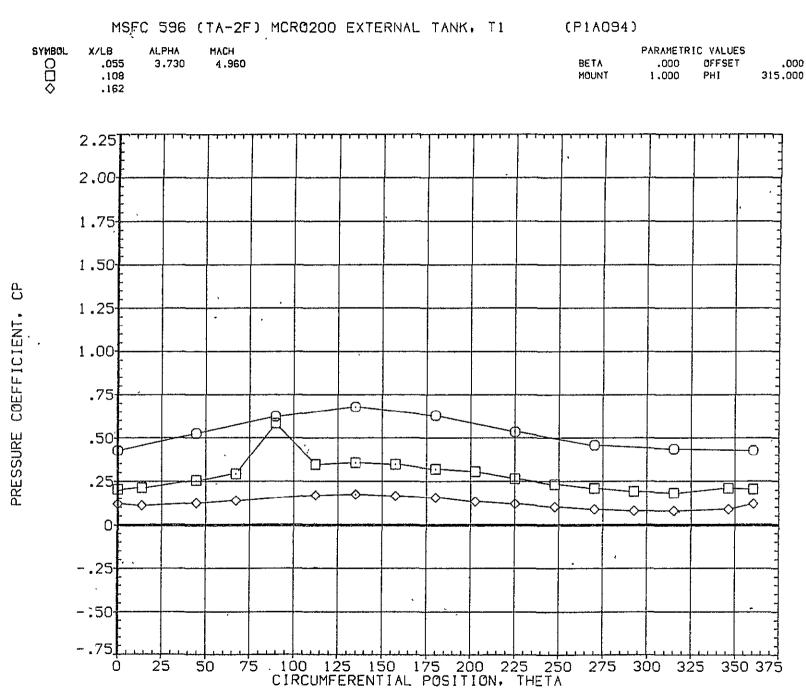


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1973

SYMBOL

X/LB

ALPHA

MACH

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PARAMETRIC VALUES

X/LB	ALPHA	MACH							DETA		PARAMETRIC VALUES .000 OFFSET .000			
.322	31700	41500										1,000	PHI	315.00
.510														
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	2.25 - 1.75 - 1.5025	2.25 2.00 1.75 1.50 1.25 1.00 25	2.25 2.25 2.00 1.75 1.50 1.50 2.25 1.00 25	2.25 2.00 1.75 1.50 1.50 2.25 1.00 25	2.25 2.00 1.75 1.00 .25 .50 .25 .50	2.25 2.00 1.75 1.00 .75 .50 .25	2.25	2.25 2.00 1.75 1.50 1.25 1.00 .75	2.25 2.00 1.75 1.50 1.25 1.002550	2.25 2.00 1.75 1.50 1.00 .75 .50 .25	2.25 2.00 1.75 1.50 1.25 1.002550	2.25 2.00 1.75 1.50 1.25 1.00 .75 .50	2.25	2.25 Solution BETA .000 OFFSET MOUNT 1.000 PHI 2.25 Solution 1.75 Solution 1.75 Solution 2.25 Solution 2.25 Solution 3.75 Sol

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1974

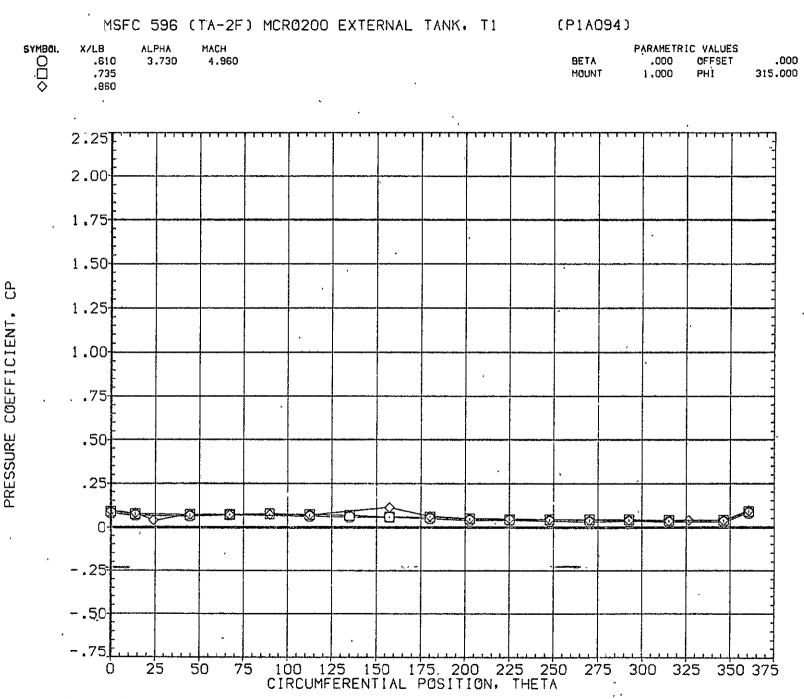


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1975

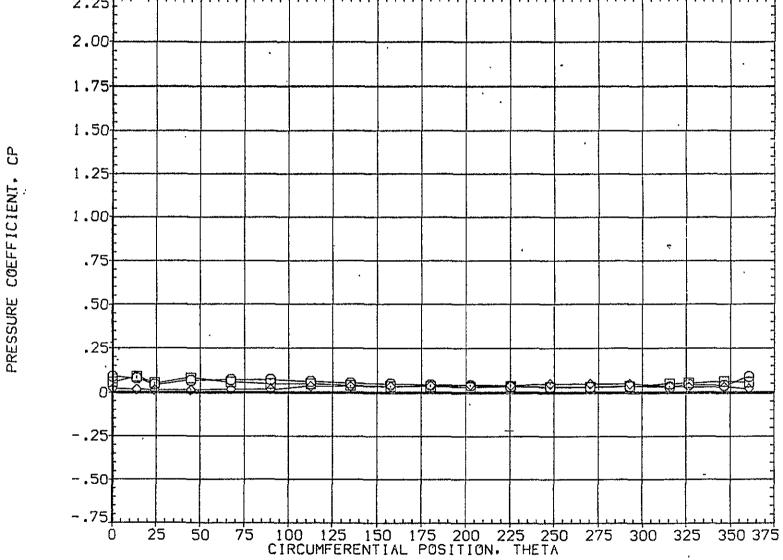


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1976

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1977

SYMBOL

X/LB

ALPHA

MACH

PARAMETRIC VALUES.

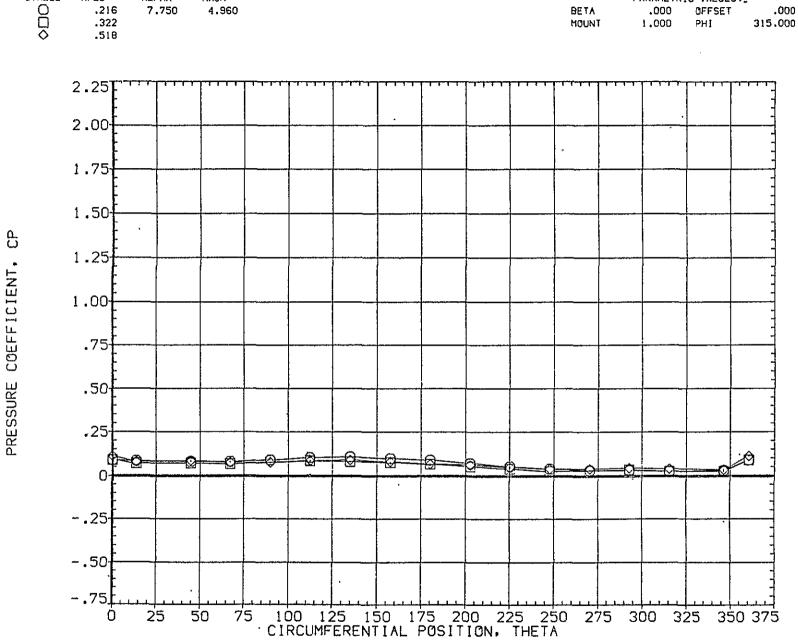
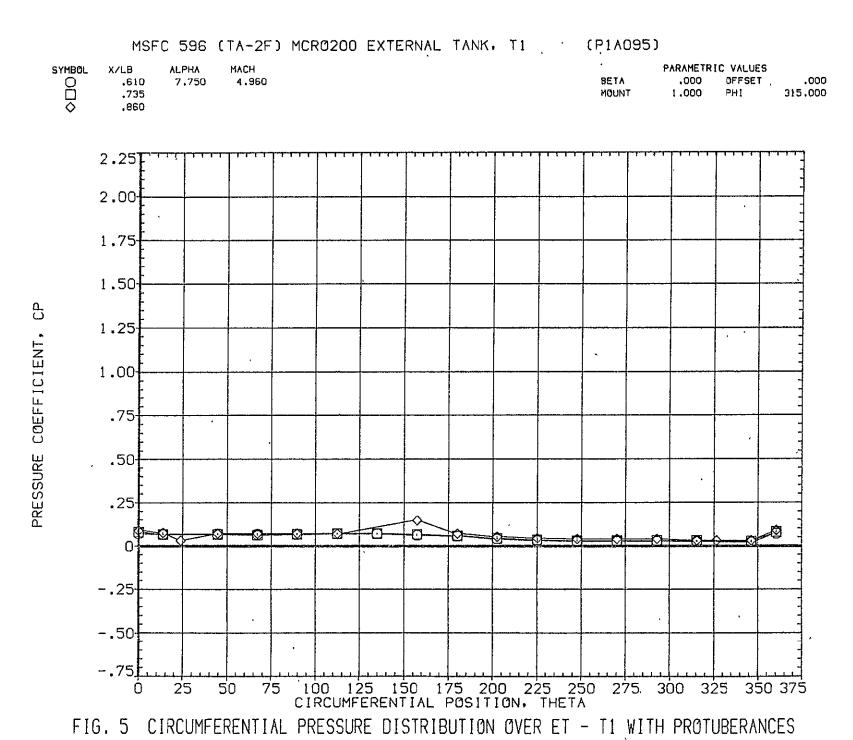


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1978



PAGE 1979

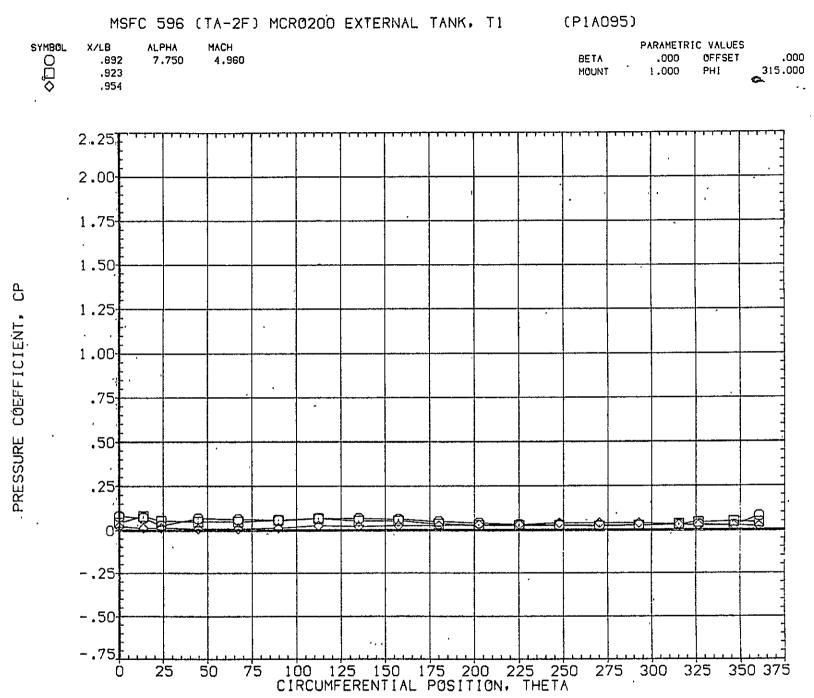


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1980

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1981

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1982

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES

PAGE 1983

SYMBOL

X/LB

ALPHA

MACH

(P1A096)

PARAMETRIC VALUES

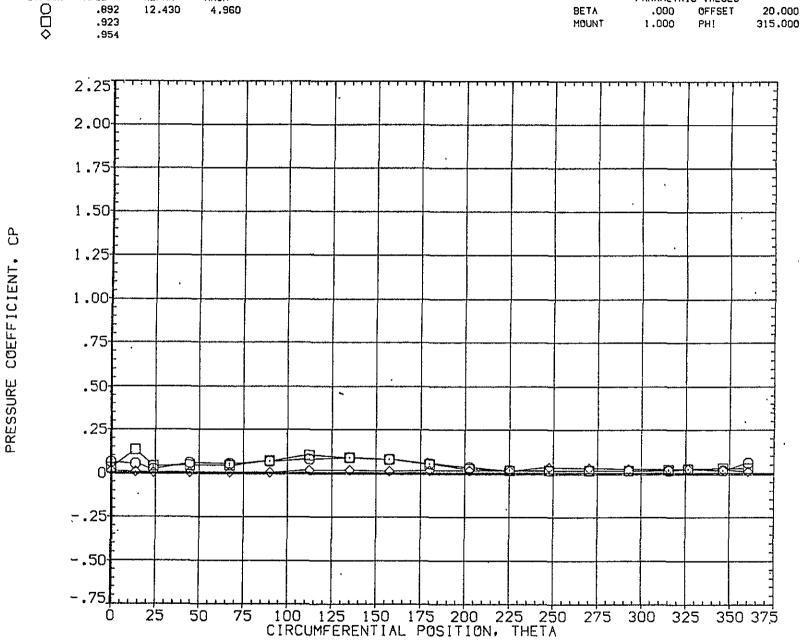


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1984

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES

CIRCUMFERENTIAL POSITION, THETA

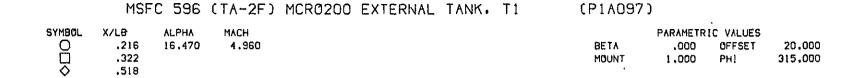
100 125 150 175 200 225 250 275 300 325 350 375

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- .75

50

25



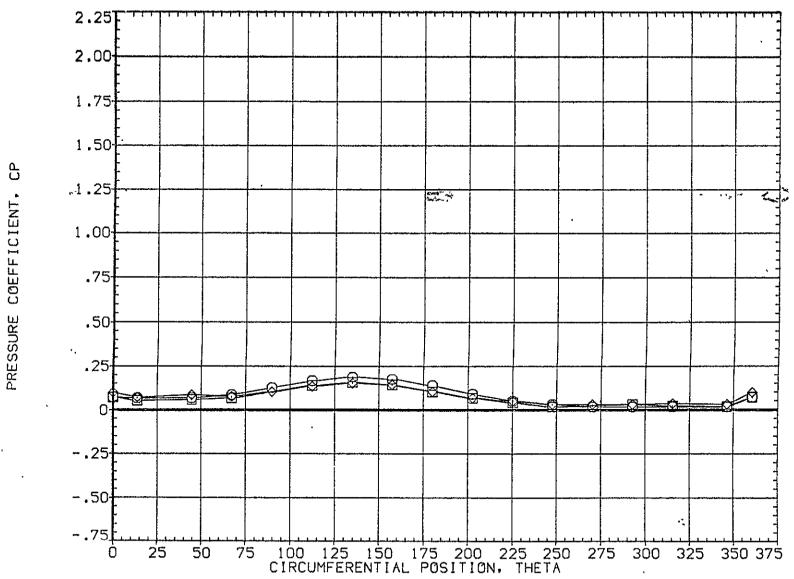


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCE'S
PAGE 1986

(P1A097)

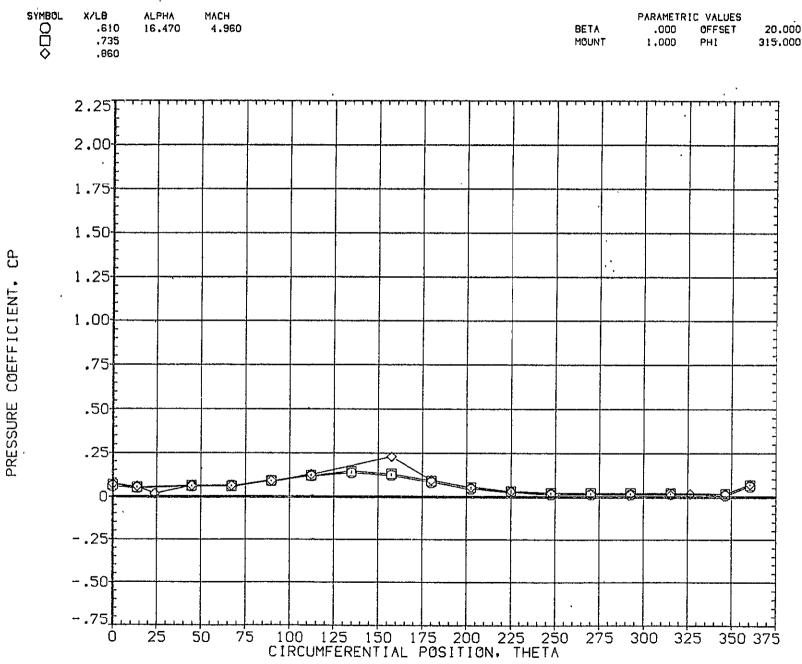


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1987

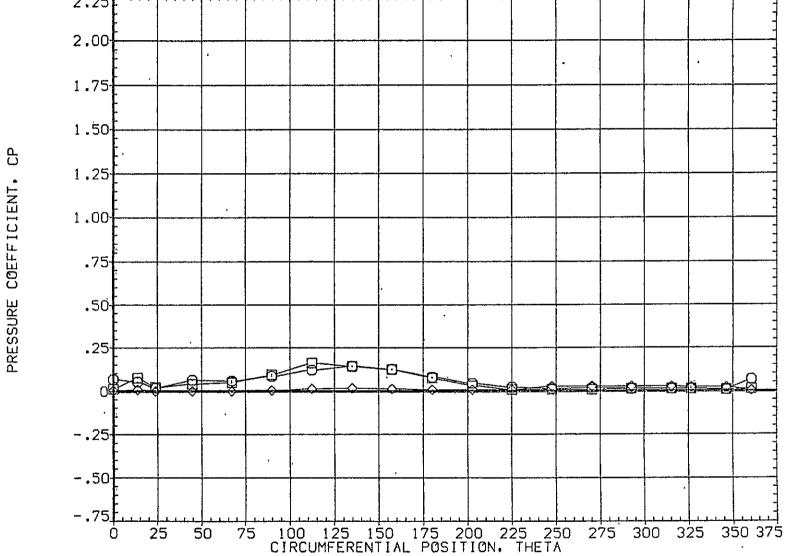


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1988

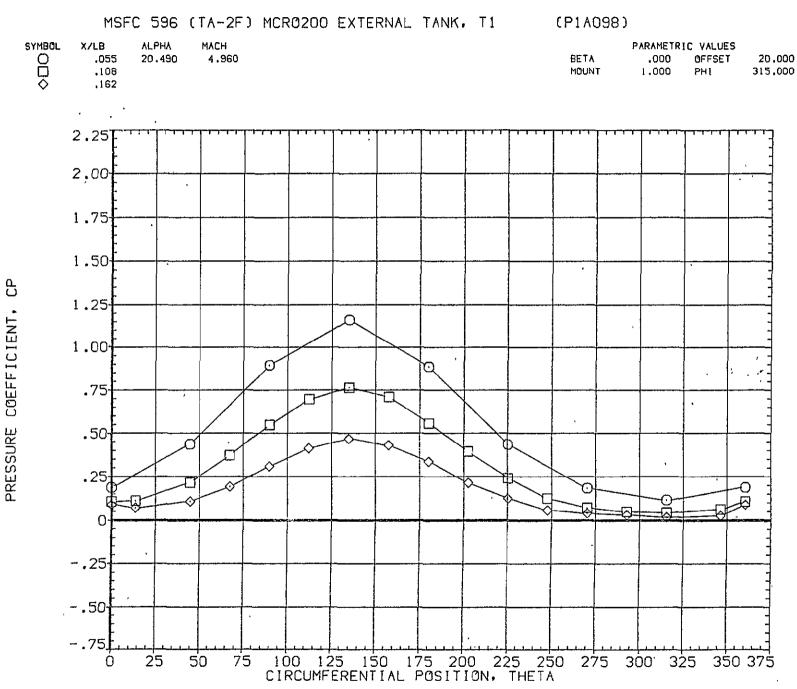


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1989

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1990

100 125 150 175 200 225 250 275 300 325 350 375 CIRCUMFERENTIAL POSITION, THETA

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- .75上

50

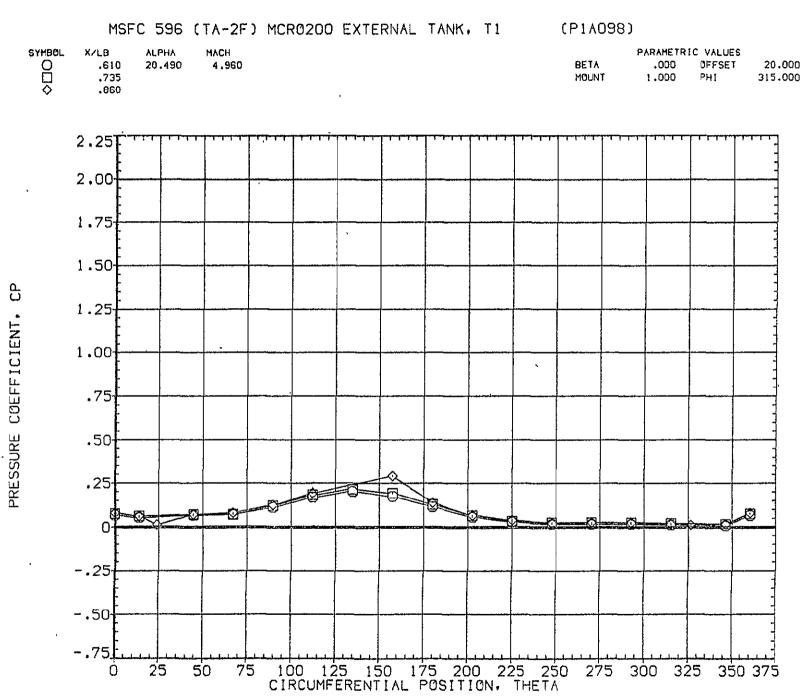


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1991

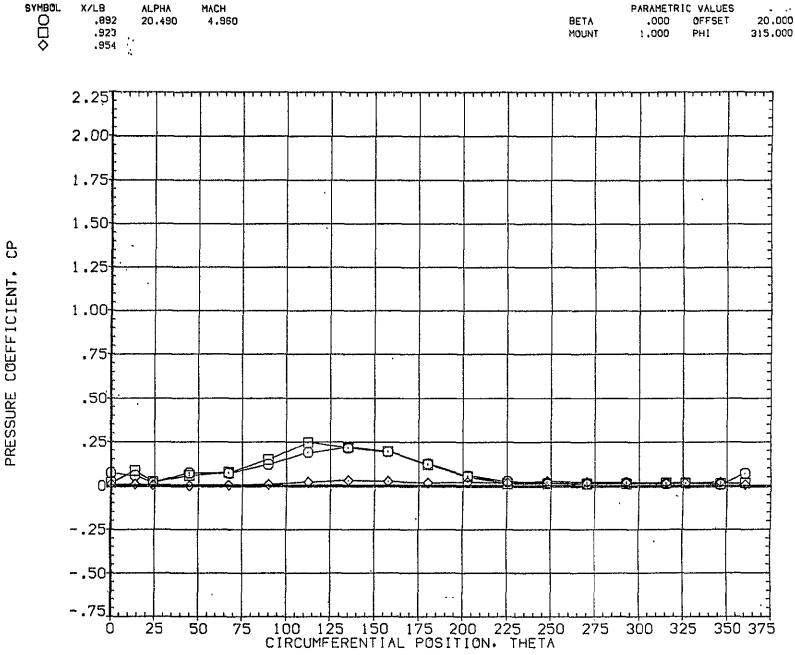
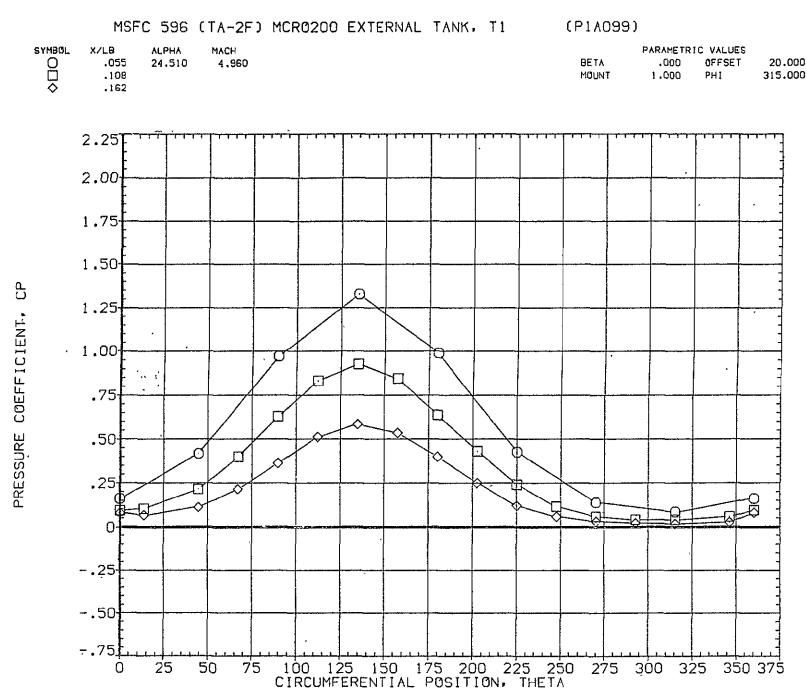


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES PAGE 1992



- FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1993





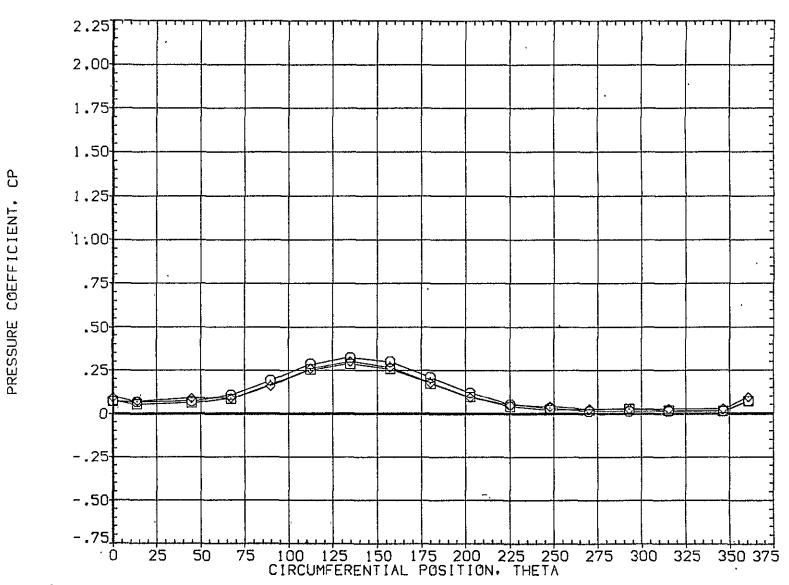


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - TI WITH PROTUBERANCES
PAGE 1994

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1995

.954

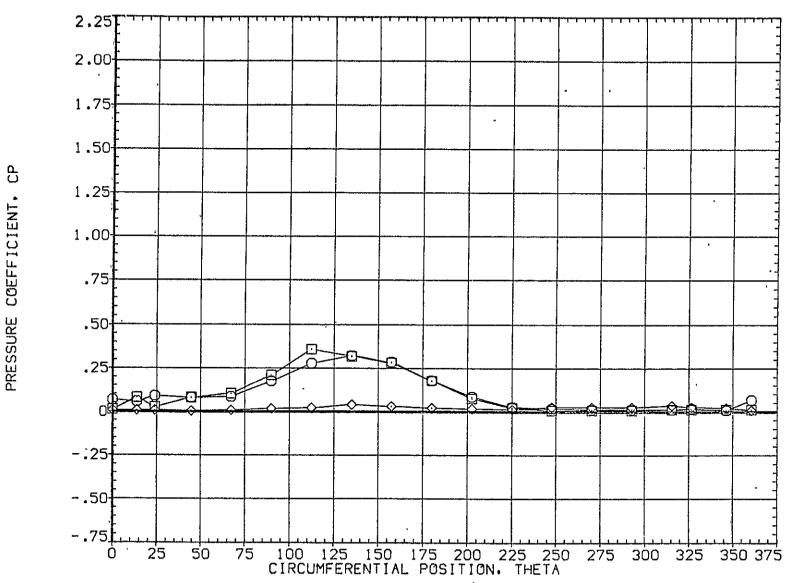
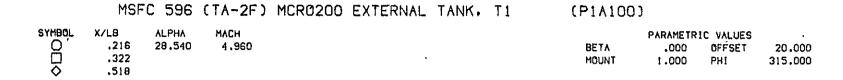


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1996

FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES PAGE 1997



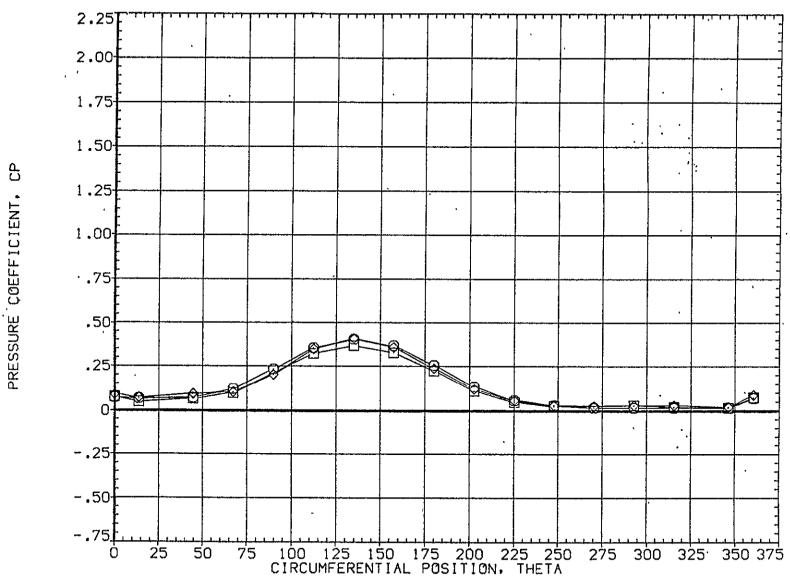


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 1998

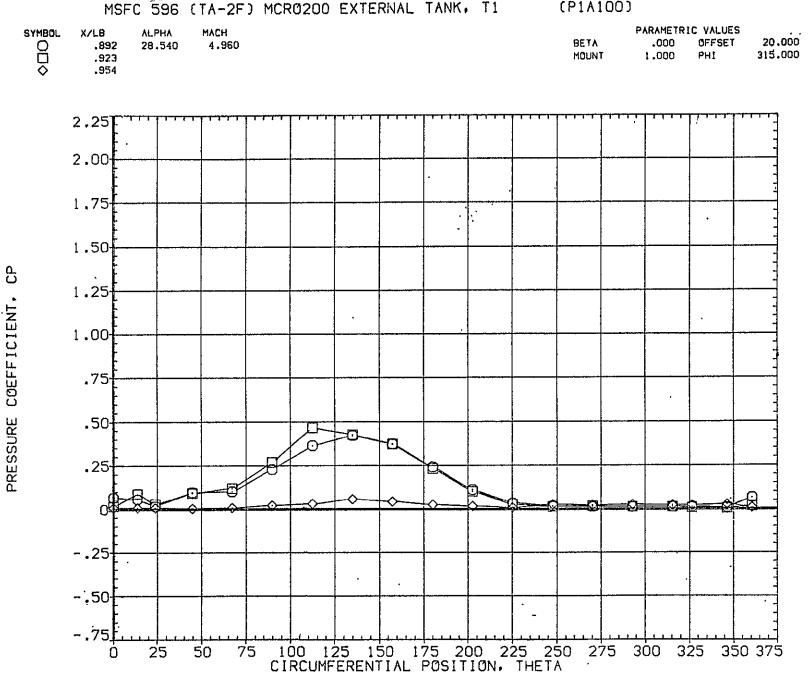


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES
PAGE 2000

MSFC 596 (TA-2F) MCRO200 EXTERNAL TANK, T1

(P1A100)

SYMBOL O O X/LB ALPHA MACH PARAMETRIC VALUES 28.540 4.960 .610 BETA .000 OFFSET 20,000 .735 MOUNT 1.000 PHI 315,000 .860

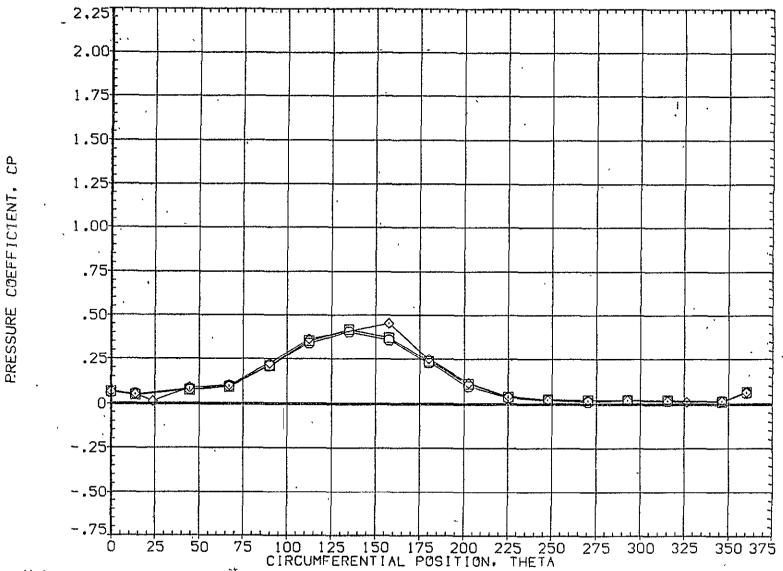


FIG. 5 CIRCUMFERENTIAL PRESSURE DISTRIBUTION OVER ET - T1 WITH PROTUBERANCES